The Turn in the Trail

IT IS a trite but true saying that "It is a long road that has no turning."

Industry and commerce in the United States have been following a long, hard trail for the past twelve months. But they have come to the turn in the trail and it has disclosed a vision of a better and more prosperous era than we have seen since the world war began ten years ago this summer. We attach no particular significance to the decimal year "10" but we do submit that, after ten years of the worst social, economic, industrial, commercial, financial, agricultural eruption that the world has ever known, it is reasonable to believe that the perilous road down which we have been traveling should have a turn.

It was hard enough for the people of the United States to witness the destruction of the old world commerce and industry and to chronicle the descent of nation after another into uncertainty, gloom and demoralization. The wreckage of Europe lay in the bitterness of racial hatreds and the competition of years' standing. When the war closed the United States had seemingly escaped to a very large degree from the communistic, bolshevistic and socialistic visitations that had afflicted other nations.

But with the advent of the Congress of 1923 and the summer of 1924, the likelihood of a communistic, bolshevistic, socialistic era in the United States afflicted the convictions of the people of this country. The question was freely asked in the magazines and the press of the country, "Are we to have a communistic government?" And a coalition in Congress of radical republicans and anti-administration Democrats brought about the assassination of general business progress. It is a strange thing that in a country so blessed with the material wealth that America possesses, so widely diffused and generally and generously distributed amongst all classes of people, any such baneful condition should have found any particular lodgment in the minds of the inhabitants. But it did, and the spectacle of a Congress that created committees who sought, encouraged and received the ex-parte testimony of disreputable, outlawed persons, giving publicity to their prejudiced, poisoned, utterly unworthy suggestions against men of irreproachable character and impeccable reputation, served to strike a deadly blow at the confidence of the people in the institutions of their own country. and against some of the finest, most patriotic public servants that the country has ever had.

What incentive is there for men to serve their government when Congress will sanction, aid and abet the assassination of the characters and lives of the men who, for small pecuniary compensation, serve their government faithfully? In industry a corporation commends its profitable servants and shows them appreciation and commendation by advancement and financial reward, but in politics a conscientious servitor or successful business man has to look forward to shame and disgrace and possibly the penitentiary, besmirched, ruined, without due process of law or even being allowed the consolation of the clergy.

But this is all passed. The turn in the trail discloses a feature in which all such baneful practices are taboo. The people of the United States never again will permit such an exhibition of wanton character assassination and its resultant prostration of the country's business as we have witnessed in the past six months. For Congress adjourned June 7th, and the country has heaved a sigh of relief that the unworthy, unmentionable cabals have adjourned sine die.

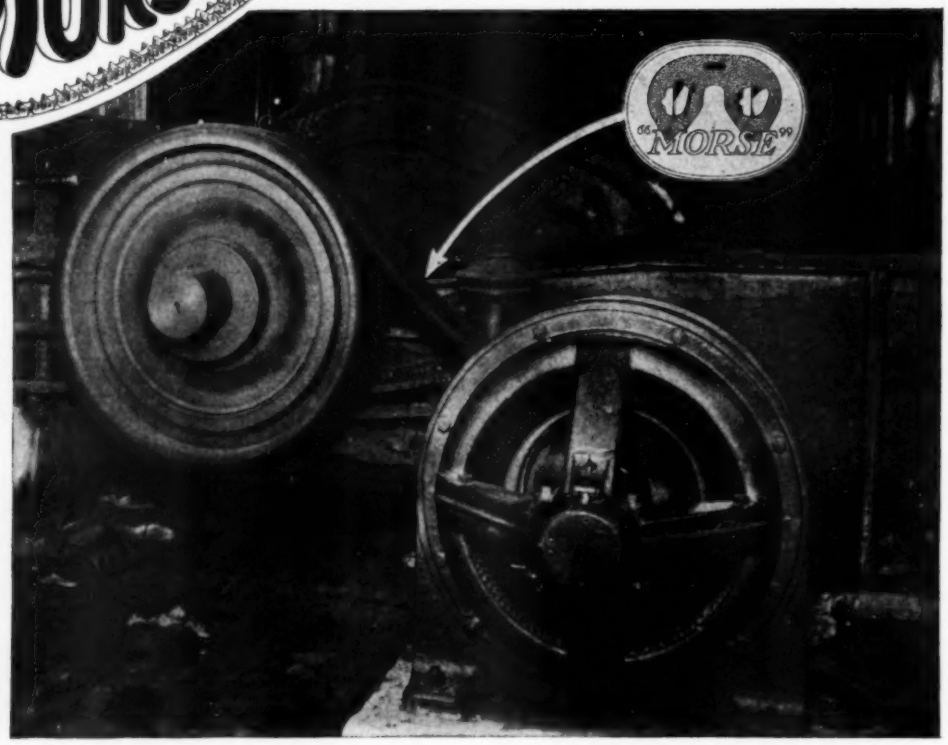
With the signing by the President of the Tax Reduction Bill, which does give some immediate relief to the people from their burden of taxation; the defeat of the McNary-Haugan Bill; and the decisive defeat by a vote of 53-35 in the Senate of the radical La Follette Plan to have Congress re-assemble on July 7th as a potential menace to the country's welfare; with the certainty that this present Congress has passed out of existence for six months to come —to all of these beneficent conditions the country has instantly responded.

Never was this country in sounder condition; never was business so healthy; there are no stocks in the hands of retailers or dealers for liquidation. Never so much as today have the consumers needed to buy commodities in generous proportions since the spring of 1919. Money has never been so cheap or credit so abundant. Call money on the stock exchange in New York went at 2½ per cent last week; time money was loaned for 6 months at 3¾ per cent immediately following the definite announcement of the adjournment sine die of this present bolshevistic Congress. Commerce and industry will immediately expand. The throttle has been pulled out and word passed along the whole line, "Forward, Proceed—with confidence!!"

The index number has touched its low point. Commodity prices will advance. The time to buy commodities is now. The American dollar will buy more goods this June than it will next September.

BUY NOW!

MORSE SILENT CHAIN DRIVES



100 *H.P. Morse Silent Chain Driving Beater. R.P.M. 685—147—Centers 60"*

Bring Your Drive Close to the Beater

Driving to the maximum within the minimum of space is an outstanding feature in Morse Chain Drives. Not only do they transmit efficiently 98.6% horsepower of the driving unit over short centers, thus allowing the motor to be brought up close to the beater, but they work quietly and smoothly, with great flexibility.

Equipped with Morse Shearing Pin Sprockets, both beater and motor are fully protected from damage when foreign matter gets under the beater rolls.

The beater drive shown in motion above aptly illustrates our point. If space saving, steady production of "finish," economy, and time saving, are an inducement, then equip your beaters with Morse Chains.

You will find a Morse Engineer, fully conversant with paper mill drives, ready to render able assistance at any and all times.

MORSE CHAIN CO., ITHACA, N. Y.

There is a Morse Engineer near you

ATLANTA, GA.....702 Candler Bldg., Earl F. Scott & Co.
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DETROIT, MICH.....7601 Central Avenue
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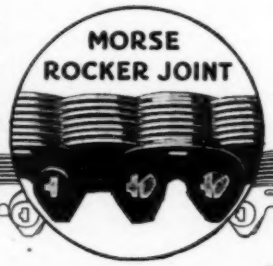


2150-30

Lay In Your Winter Coal Supply Now

WE ARE told that one of the reasons that the railroads are not doing their normal amount of business at this time, is on account of the fact that practically no coal is being handled.

In talking to the sales manager of one of the largest western coal companies several days ago, he stated that there "was nothing doing" in the coal business, and that no one seemed to be buying future supplies.

One good axiom of business is to buy when no one else is buying, for at such a time the price is generally lower, and there is no trouble with deliveries.

Secretary Hoover has sent the following letter to National and State Trade Associations in the United States:

To the Secretary:

During 1923 the railways through the co-operation of the manufacturing and distributing trades and the coal operators and distributors were able to handle the national coal traffic in a most efficient manner without car shortages. This was accomplished to a considerable degree by co-operation among the trades for the purchase and storage of coal during the summer season. As you are aware, the great danger point of traffic congestion is the fall season when the combined crop, winter goods, and household coal movements have always, except through last year's co-operation, combined to create a car shortage.

The fall car shortage always has the effect of increasing the price of coal and of seriously disturbing the whole economic machine. Security lies in repeating the storage performance of last year, by the manufacturer's of the country taking reserves of coal during the months of May, June and July, thus foregoing the necessity of coal shipments during the peak period in competition with the household movement. Outside of strike years, these summer months are universally the period of lowest bituminous coal prices.

We also have a national problem in the long view of securing cheaper coal by maintaining more regularity in the production of our coal mines through planning out its seasonal fluctuations. This can only be brought about if the consumers are willing to store coal during the low production season.

There is, therefore, every transportation and financial reason for storing coal during the next few months in preparation for the autumn need. It would be a contribution not only in the interest of the consumer but of the railways and the coal industry if we could this year produce the same successful results that your association so materially assisted in bringing about last year.

I am, therefore, asking that your association should actively interest itself in bringing these matters to the attention of the large coal consumers from the point of view of their personal interest as well as a contribution to the mutual good of American business.

Yours faithfully,

HERBERT HOOVER.

About once a year we have urged on the paper and pulp manufacturers to lay in their winter supply of coal early. Many paper and pulp mills have complete storage and handling systems for enough coal to tide them over any possible emergency that might arise in the winter time from bad weather, slow deliveries, possible strikes, etc. Others still follow out their old rule of not putting in a supply, and trusting to luck to get through, but their luck often times fails them, and gray hairs come faster than usual in trying to get a sufficient supply to get by on.

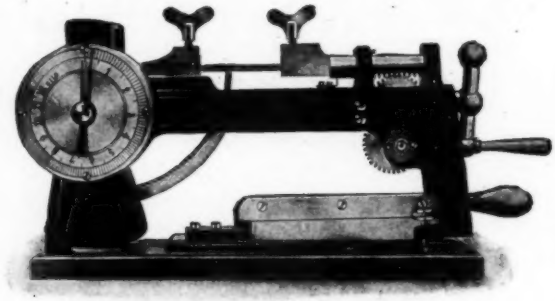
Every paper or pulp mill could make a real profit in money, and save considerable worry by installing a complete coal storage and handling system, and then storing up any amount to ten thousand tons and make a real profit out of it the first year.

Buy and store your winter's supply now.

Poller Paper Instruments Insure Accuracy

Paper Tester No. 400

Indicates accurately tensile strength in pounds and percentage and stretch in inches and percentage—all in one operation. Temperature makes no difference. It is the "Supreme Court" of all testing machines. No springs to get out of order. No glycerine or rubber discs to replace. All numerals are in English units and not in Continental Metric system.



Paper Tester No. 399

Indicates breaking or tensile strength of paper. Operated by means of gears and screws. No springs to weaken and influence results. This machine is portable, weighing less than five pounds.

Pocket Scale

For coarse or fine papers. By weighing a piece 2½x3¾ the standard ream weight is accurately shown. Very accurate and reliable. Weighs less than one pound and can be carried without inconvenience.

Paper Scale

Indicates ream weight 24x36—480 or 500.

These scales are furnished for weighing a full size sheet, 24x36, or a small piece. Both will indicate ream weight by direct reading. No springs.

Automatic Micrometer

Measures thickness of board and paper accurately. Best instrument on the market for this purpose.

Pocket Micrometer

Handy pocket gauge for paper or board. Very accurate.

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Vol. 6 JUNE, 1924 No. 3

Super-Power and the Paper Mill

By ARTHUR S. WELLS

The author of this paper has assumed practically ideal conditions as a basis for his calculations. Comment and discussion is invited on the subject.—Editor.

SEVERAL recent discussions of super-power plants and the super-power scheme have pointed out the fact that even our most efficient central station systems cannot compete with an individual steam power plant in such an industry as paper making where relatively large quantities of steam are used in process. This, of course, is true because in such cases a large proportion of the total power requirement can be developed as a by-product in non-condensing units or extraction turbines at very high heat efficiency, whereas the most advanced steam super-station so far contemplated cannot exceed 25% heat efficiency from coal pile to station bus bar, and this figure must be on the average still further reduced to say 23% to allow for transmission losses from central station to the consumer's switchboard.

In early steam engine practice, the advantage of utilizing exhaust steam in manufacturing processes was fully recognized. Where processes could not absorb the full non-condensing exhaust, piping was often so arranged that the engine ran non-condensing on one stroke and condensing on the other, or with cross compound units, low pressure steam could be drawn from the receiver. Today, with extraction turbines, or non-condensing turbo generators operating as automatic power producing regulating valves, the flow of process steam may be kept balanced regardless of all ordinary fluctuation in power or steam loads.

In this connection it should be pointed out that contrary to the old idea, water rate on a non-condensing generating unit exhausting to process work and operating in conjunction with condensing units is important, because every extra kilowatt delivered for a given quantity of process steam means just that much less load on the condensing units and a consequent direct saving in coal. To be sure the economical unit takes more heat from the steam, but as about 90 per cent of the value of steam in process lies in its 970 B. T. U. of latent heat, the reduction in quantity of steam to condensing units is practically net gain.

The application of an automatic non-condensing turbo generator is well illustrated by two units now being installed in a large paper mill. A maximum electrical load of 7,000 K. W. and steam demand of 75,000 lbs.* per hour is to be carried by two turbo generators: one 6,000 K. W. straight condensing at 28.5″ vacuum with a water rate of 13.5 to 13 lbs. per K. W. H.; one 2,000 K. W. non-condensing at 15 lbs. sq. in. back pressure, water rate 35 to 40 lbs. per K. W. H., the electrical load on the 2,000 K. W. unit being automatically governed so that the turbine will at all times exhaust just enough steam to maintain the required pressure for process work. Swings in the load will be handled by the 6,000 K. W. unit with the usual type of turbine governor. Steam pressure for both units is 185 lbs., 100 degrees F. super-heat at the throttle.

As the steam passes through the non-condensing unit, its total heat content is depleted about 8 per cent, so that with full load on both units the steam chargeable to power may be written as follows:

6,000 K.W. at 13.5 lbs.	81,000
2,000 K.W. at 35 lbs.x.08	5,600
8,000 K.W.	86,600 lbs. steam per hr.

or 10.8 lbs. steam per K. W. H.

The combined efficiency of boilers and economizers in this plant should be at least 80%. Then since each pound of steam represents the addition of about

*This figure does not represent the entire process steam demand, as steam engine drives on paper machines and other equipment also furnish exhaust steam.

1,150 B. T. U. by the boilers, it follows that these units will develop one kilowatt hour on $\frac{10.8 \times 1,150}{.80}$ or 15,525 B. T. U.

With lighter loads on the 6,000 K. W. unit, even better overall water rates may be expected.

5,000 K.W.H. at 13.5 lbs.	67,500
2,000 K.W.H. at 35 x .08	5,600
	73,100 lbs. steam per hr.
	10.4 lbs. steam per K.W.H.

On a heat unit basis this means 14,950 B. T. U. per K. W. H.—a very attractive figure when it is considered that the most advanced 1,500 lb. steam pressure super-station so far proposed only holds forth a promise of 14,000 B. T. U. per K. W. H. under ideal operating conditions, and under actual operating conditions in 1923 there were probably few large central stations doing better than 19,000 B.T.U. per K.W.H.

A paper mill very favorably situated with respect to a large efficient super-power system might, however, utilize its service profitably by operating an automatic, power producing, turbo generator, pressure regulating unit in parallel with the central station service. To illustrate such a system let us consider the specific problem of an imaginery four machine book paper mill such as outlined below.

Capacity of mill—160 tons per day machine finished and super calendered book paper.

Raw material—85 per cent wood pulp; 15 per cent old papers.

Power requirements:

Beaters	800 K.W.
Jordans	600 K.W.
Paper machines	800 K.W.
Super calenders	350 K.W.
Water supply	300 K.W.
Old paper converting	200 K.W.
Stock pumps and miscellaneous	150 K.W.
Power plant auxiliaries, machine shop, etc.	300 K.W.
Total load	3,500 K.W.

All equipment to be electrically driven.

Process steam requirement:

	Lbs. per hr.
Cooking and miscellaneous in old paper system	3,500
Preparations of size, etc.	1,500
Paper machine dryers	36,000
Total	41,000
Building heating, 6 months	15,000
Winter total	56,000
Average annual	48,500

The power system of this mill, in order to develop maximum efficiency, must be designed for electric drive throughout; all steam for process work must first pass through the turbine, and the initial steam pressure must be as high as possible, consistent with reasonable first cost and reliable operation. Steam accumulators should be provided between the turbine exhaust and the process work to absorb unusual fluctuation in steam demand. A boiler pressure of 300 lbs. with 200 degrees F. super heat is entirely feasible with standard materials and has been employed in large central stations for several years. Since all equipment including auxiliaries will be motor driven, a short direct line from boiler to turbine will be practically the only high pressure steam piping required. Process steam will be supplied at 15 lbs. with a separate supply at 50 lbs. extracted from one of the intermediate stages as required. As the quantity of 50 lbs. steam used will be relatively very small, it may be disregarded without serious error and the water rate of the turbine based on 15 lbs. back pressure giving, say, 28 lbs. of steam per K. W. H.

Load conditions may then be figured as follows:

Six summer months—	
Generated power	1,460 K.W.
Purchased power	2,040 K.W.
Total power	3,500 K.W.
Six winter months—	
Generated power	2,000 K.W.
Purchased power	1,500 K.W.
Total power	3,500 K.W.
Average for year—	
Generated power	1,730 K.W.
Purchased power	1,770 K.W.

Assuming as before that steam passing through the non-condensing turbine suffers 8 per cent depletion, and, further, that the central station service delivers power to the mill switchboard on the basis of 19,000 B. T. U. per K. W. H., the average total power consumption of this mill would be produced on a basis of about 10,800 B. T. U. per K. W. H., or 0.8 lbs. of 13,500 B. T. U. coal per K. W. H.

An analysis of the costs involved in this proposition would show that the total charge for by-product power, both operating and fixed with coal, in the neighborhood of $5.00 per net ton would be about $0.002 per K. W. H., so that assuming $0.01 per K. W. H. as the cost of purchased power, the combined cost would be about $0.0058 per K. W. H.

Another interesting figure is the coal consumption per pound of finished paper including that burned by the central station service. This is computated as follows:

Mill power plant—

48,500 lbs. steam per hour.

Evaporation at 82 per cent efficiency 13,500 B. T. U. coal = 9.7 lbs. steam per lb. coal.

$$\text{Daily coal} \quad \frac{48{,}500 \times 24 \text{ hrs.}}{9.7 \times 2{,}000} = 60 \text{ tons}$$

Central station—

$$\frac{1{,}770 \text{ K.W.} \times 24 \text{ hrs.} \times 19{,}000}{13{,}500 \times 2{,}000} = 30 \text{ tons}$$

Total coal .....90 tons

$$\frac{90 \text{ tons coal}}{160 \text{ tons paper}} = 0.56 \text{ tons coal per ton paper.}$$

The above figures are, of course, based on practically ideal conditions with no allowance for stand-by losses over week ends and other shut down periods. They should, therefore, probably be increased from 10 to 15 per cent to meet practical operating conditions, bringing the coal consumption up to about 0.65 ton coal per ton of paper.

In the two foregoing examples, economies attained have been based on present day equipment, the only departure from standard practice being the application of modern central station boiler pressures of 300 lbs. to paper mill work. But a steam pressure of 300 lbs. per square inch, while high for an industrial plant, is no longer unusual for the super-power type of central station as plants are being built today for 500 lbs., and at least one new station will have a boiler and turbine unit operating at 1,200 lbs. Therefore, with a view to determining the ultimate possibilities of high pressure steam in paper mill work, it might be interesting to disregard for the moment all practical consideration of first cost, special materials, and operation trouble, and consider a non-condensing steam unit operating at, say, 1,500 lbs. per sq. in. pressure with 900 degrees F. total steam temperature designed for a 160 ton paper mill similar to the one already considered.

The boiler plant for this combination would be equipped for pulverized coal burning, using all steel encased air cooled settings, air preheaters, economizers, motor driven auxiliaries and highly developed automatic control. With this combination, radiation losses would be cut to not more than 2 percent, flue gas temperature would not exceed 200 degrees F., and combustion would be practically perfect so that we should attain an overall boiler, economizer and preheater efficiency of 90 per cent. In the paper mill all condensed steam would be saved so that very little raw water makeup would be required for the boilers, and equipment would be provided for reclaiming heat contained in the exhaust vapors from machine hoods.

Steam delivered to the turbine at 1,500 lbs. absolute 900 degrees F. would contain about 1,425 B. T. U. per lb. and in expanding to 30 lbs. absolute would give up theoretically about 335 B. T. U. per lb., so that the water rate of a perfect turbine would be $\frac{3{,}433}{335}$ or 10.2 lbs. per K. W. H.

Assuming the Rankine Cycle efficiency of the turbine to be 65 per cent, actual water rate then would be $\frac{10.2}{.65}$ or 15.7 per K. W. H. Then taking steam and power requirements of the mill outlined on previous pages, we obtain the following results:

Six summer months—

Generating power $\frac{41{,}000}{15.7} = 2{,}600$ K.W.

Purchasing power 900 K.W.

Total .....3,500 K.W.

Six winter months—

Generating power $\frac{56{,}000}{15.7} = 3{,}500$ K.W.

Purchasing power 000 K.W.

Total .....3,500 K.W.

Average generated power.....3,050 K.W.

Average purchased power..... 450 K.W.

It will thus be seen that about 90 per cent of the total power requirement would be supplied by non-condensing operation, at the rate of not more than 5,000 B. T. U. per K. W. H., and if the balance of power required were obtained by parallel operation with a super-economy central station at, say, 14,000 B. T. U. per K. W. H., the total power requirement would be supplied on a basis of about 6,200 B. T. U. per K. W. H., or about 0.5 lb. coal per K. W. H.

With such performance as an attainable goal, the individual or isolated paper mill power plant may very well have its own super-power features and will, no doubt, continue in the future, as in the past, to represent the most economical source of power for the average mill relying either wholly or in part on steam for power generation.

In Lincoln's time it was necessary to read one book one hundred times. Now we have one hundred books and we do well if we read them once. We do not advocate a return to the conditions then prevailing. But to read the Bible a hundred times, as Lincoln did, would do many of us much good.

To keep dust and dirt from getting into bales of pulp in shipping and in storage, some mills have found it profitable to pile them all so that the outside wrapper is on top and does not form a cup to catch the dirt.

New Principles in Paper Mill Illumination

By HENRY FROMMES

CONSIDERABLE investigation has been made in recent years along the lines of better lighting in factories, plants and mills. Extensive research work along this line has been conducted by the experimental laboratories of the large electrical concerns. Several important works have appeared on the subject. A large part of this is general and covers no industry in particular but the writer recently has had an opportunity to study, at close range, data bearing specifically on our industry and the results of this study are embodied in this article in which it has been sought to leave out more minute technicalities.

However, certain general principles are of paramount interest in any scheme of plant lighting.

There are certain derivatives of proper illumination which may be counted in actual profits and are being so accounted today. These may be applied cheaply and effectively in any unit where they are not now applied. These derivatives have been summed up, briefly, as follows:

Accident prevention.

Decrease of waste.

Greater speed and efficiency per operative.

Increased personal morale of operatives.

Proper lighting in our plants by no means implies greater light volume, rather the correct quality of the illumination and its proper distribution at points most needed, also, light from the proper angle which is perhaps the cardinal principle of factory lighting. Light coming from the wrong direction is the most serious defect in industrial illumination today.

It is a fact that poor lighting, through waste of current, costs more in dollars and cents than good lighting. Tests have proved this to be true in a literal sense.

It is a generally accepted fact in the industry that architects and industrial engineers are inclined to give too little attention to correct illumination. Even the newest factory units are sometimes defective in that they have not been given the full benefit of modern principles and findings in this respect. While manufacturers, operators and superintendents are utilizing every approved principle of sanitation and hygiene which make for efficiency, they too often neglect the information which is available on correct illumination, and it is the purpose of these articles to point out, in a general way, its application.

While our factories and plants are now constructed so that the maximum amount of daylight is assured for employes, artificial illumination must be depended upon to a certain extent.

In considering illumination for the industry, it is necessary to have regard to the special needs thereof.

In the so-called "daylight industries" there are approximately 300 working days per year in which there is an average of two hours per day during which artificial illumination is necessary, according to Mr. W. H. Rademacher, one of the best known writers on this subject. He also points out that the total of this estimate warrants the closest attention to correct illumination, owing to the part played by light in the working efficiency of the operative.

The period of artificial light occurs at the end of the working day when the greatest amount of light is required. Employes at this time are at their lowest physical and mental stage.

It is not only in the interest of the employe that properly lighted workrooms should be provided but likewise in the interest of labor turnover and product quality. It also is true that some of the worst accidents in plants are a result of incorrect or insufficient illumination. Eyestrain quickly disables even the best operatives in the course of time and thus increases the absentee curve in the factory or plant.

In some of our places eyestrain is among the chief causes for absenteeism. That is, the results of eyestrain, such as headache and exhaustion. This is especially true among women workers.

The best illumination in the various departments of paper mills may be summed up as follows:

FINISHING ROOM: Inspection tables lighted to a high efficiency by means of 150 watt daylight lamps, in frosted bowls, with dome reflectors, 6 to 7 feet above tables, on 8-foot centers.

MACHINE ROOM: Low-hanging light units, 8-½ feet. Lights 8 to 10 feet apart.

BEATER ROOM: Suggest 100 watt lamps on dome reflectors, spaced on 16x18-foot centers and 12 to 14-foot hanging.

Beater Room Illumination

In the majority of mills, the beater room is found to be too dark for safety or efficiency. J. H. Kurlander in writing on this subject says:

"There seems to be a belief prevalent among some people that working conditions (in the beater room) can be made safe by supplying bare drop lights, or low wattage units placed at wide intervals, while yet others adhere to the impression that artificial light of any kind is a rank superfluity and indicative of gross extravagance.

"While it is true that most of the work performed is fairly coarse and automatic in its nature and the time necessary for its performance cannot be varied,

still were good lighting provided, the loading and unloading of beaters * * * could be speeded up."

In considering the machine room, the driving side must be given enough illumination to insure safe movement among the gears and its vertical surface must receive a share of light. Illumination for inspection is necessary at the wet end. Paper inspection points require an intense daylight lamp illumination, also the calender and slitter points. Bowl-enameled lamps in dome reflectors are recommended or C lamps combined with elliptical angle reflectors and dome reflectors.

The first method applies to low machines, while the second should be used where the machines are higher.

In the case of the finishing rooms, simpler lighting problems are met with. The constant examination of white calendered paper stock under a glaring light will eventually injure the eyes of any operator. Therefore, clear and direct lights should never be used on inspection tables. The blue bulb daylight lamp has been adopted by most mills for this work.

General illumination is used in the finishing room for all but inspection work.

Superintendents are possibly familiar in a general way with the fact that lamp makers today have come pretty near to the duplication of daylight for factory purposes. The value of this in the plant or factory can well be appreciated. But even though the lamps recently manufactured to reproduce approximately the conditions of daylight might be of wonderful service in one department of the works, they would be undesirable in another. For the very good reason that artificial daylight, as it is called, is less efficient and more costly in proportion to ordinary electrical illumination.

Says G. H. Stickney: "For ordinary purposes the color of artificial light is not highly important so long as it is pleasing and does not depart too far from that of daylight. In fact, a yellow tone in light is often desirable on account of artistically pleasing qualities. On the other hand, there are certain applications in connection with the manufacture, inspection and sale of colored materials where it is highly important that they be viewed under an illuminant that is much closer to daylight in color than is the illumination from ordinary lamps."

The new types of lamps have had much to do with the changes in the system of illumination in the industry, also the increasing use of reflectors and their placement. The new system of factory lighting has been the result, too, of greater power per light unit and this is especially true in the industrial world. Each light unit is being made to do a greater amount of work in a better way. General and localized general systems of lighting are greatly increasing efficiency in the industry. They have replaced the old style method of "local lighting" with which a few factories are still getting on.

Local lights produce a glare which it has never been possible completely to overcome. General or localized general lighting give a better illumination, minus the glare if the appurtenances are correctly placed and adjusted.

General illumination is found in most of our plants today. It involves less upkeep cost, less breakage of lamps and puts the power of improperly deflecting the light out of the hands of the individual operative. It also reduces current bills over the old style, local illuminating units which became the rule when we were dependent upon the early carbon lamps.

General lighting requires fewer outlets and therefore reduces the cost of installation.

In many of our factories and plants, the local conditions are such that a general scheme of illumination of itself will not entirely suffice. In this case localized lighting is used as an auxiliary. But even this calls for judicious planning. Often preparatory operations must be started with the illumination from an individual light while the function of the operative is performed from the illumination of the general system.

On the other hand, many of our places have sufficient daylight in their workrooms to adopt a limited number of localized units which serve the purpose. In such cases difficulty is often experienced in the short winter days or on "overtime" periods when only a general system of lighting will enable the shop to keep going at all. Therefore, it is pretty safe to say that the general illumination plan is essential to efficient operation over the entire year.

In some places plugs are provided for local lamps when required and these are handled just as special tools and parts or materials, being requisitioned for by the worker when required and returned to stock when not in use.

After all, the main point in illumination is to get all the light possible when and where needed and for this reason general rules are subject to some modification.

Importance of Light Reflection

Reflectors of various types contribute greatly to the efficiency of the modern electric lamp and there are many types of these on the market today. They influence greatly the quality and quantity of the illumination from a given wattage, also play their chief role of reflection through the character of the surface provided.

Reflected light is the order of the day.

Diffusing globes also contribute to the proper spreading of the illumination and are being adopted widely where general lighting is depended upon. These are of steel, enameled for industrial purposes.

The correct illumination of workrooms varies in factories and plants in relationship to their size. In the smaller shops more operations are carried on in a single space unit than in the big and more modern ones. Where such a multiplicity of production op-

erations are carried out on one floor, and the conditions of natural light are fairly uniform, the auxiliary artificial lighting system must vary locally to meet the conditions of each operation.

In larger plants where each floor is given to a single operation or series of similar operations, the general scheme of illumination remains the same in all parts.

Lamp manufacturers have been striving for a whiter light for years. The experiments have been vast and thorough and much success has been achieved. All of us recall the yellowish rays from the electric lamp of 20 years ago. But for industrial purposes the white light is best, though this may not necessarily hold good in other lines such as in retail shop windows where the yellowish light serves an artistic purpose, while its light production from a given wattage is greater than with the whiter light.

Importance of Initial Installation

In a very large number of factories and plants the lighting system is not installed with the same degree of care given machinery, ventilators or heating system. There is a tendency in the trade to try out one method after another in order to get the desired effect. This proves a very costly method of determination and then, often, the electrician fails to get the best results. There are too many elements in correct lighting for the ordinary electrician to properly grasp and apply in a practical manner.

No matter what your particular conditions may be, they will be met by a set of approved rules in regard to the types of lights, and their placement through their volume and quantity may be a thing to study separately.

In regard to pulp making, lighting problems, while comparatively simple, should be solved in a way that will meet practical needs of the work carried on. The main point obviously is to secure safety for operatives. There is very little labor in rag pulp making that requires delineation of detail for the worker. Valves can be seen and handled in a comparatively dim light.

General lighting systems are best in pulp rooms, outlets being placed at wide intervals from the ceiling. The outlets must be so arranged that they will add to efficiency by giving necessary illumination to aisles and passages for the workmen. Needed light intensity for pulp making departments are given as follows:

	Intensity in Foot-candles
Sawmill	3.0
Wood Room	
Pond room	3.0
Barking	3.0
Chipping	3.0
Sulphite Mill	
Digester house	
Charge floor	3.0
Bottom floor	3.0
Screen department	3.0
Wet room	4.0
Soda Mill	
Digester house	3.0
Recovery	3.0
Evaporator	3.0
Sulphate Mill	
Digesters	
Recovery	
Ground Wood Mill	
Grinding room	3.0
Bleaching Room	3.0
Rag Pulp Mill	
Sorting	8.0
Thrashing	4.0
Cutting	4.0
Steaming	4.0

Where rooms in paper and pulp mills are divided into "bays," it is the correct practice to allocate outlets with symmetrical respect to these bays. Most of the modern paper mills have followed this plan, which also holds in most other industries with large floor areas.

The number of lamps to the bay will depend upon the height of the ceiling. The number per bay in a paper mill averages about 4. In some cases it runs considerably higher.

In any plan of plant or factory lighting serious consideration must be given to the color of walls and ceilings. It is the common practice now to make these white which, if they are a dull white, adds to the volume and the color of the illumination considerably. Reflected light from white walls not only gives operatives a better light in which to work, but likewise makes the worshop more attractive.

In planning, allowance should be made for the fact that during the dull winter days extra light volume will be needed and also for occasional overtime work. The best lighting plans in the industry are tuned up to the worst probable daylight conditions which the shop will have to meet. A poorly lighted workroom may be easily shut down from the darkness caused by a mere thunder shower, and an hour of this or even less proves quite costly.

Poor Light and Decreased Production

Tests made recently by the engineers of a large electrical company proved that inefficient workbench illumination slows down production in exact ratio to its deficiency. These were workbench tests and were planned to meet the conditions found in the average shop. On the other hand, adequate illumination (not necessarily greater volume) speeded up production at the bench to a surprising degree.

In addition, eyestrain—which shop hospitals watch closely—is much less prevalent in the modern well-lighted shops than in the old one where makeshift illumination is given operatives. This is especially

true in departments where the bench work is of a detailed description. Eyestrain results in headaches which often increase absenteeism. Every foreman knows this. The industry has a real interest in the development of what is known as "artificial daylight." We quote G. H. Stickney, a well known industrial lighting engineer, on this subject:

"For ordinary purposes, the color of artificial light is not highly important so long as it is pleasing and does not depart too far from that of ordinary daylight. In fact, a yellow tone in light is often desirable on account of its artistically pleasing qualities. On the other hand, there are certain applications in connection with manufacture, inspection and sale of colored materials where it is highly important that they be viewed under an illumination that is much closer to daylight in color than is the illumination from ordinary lamps.

"* * * Although daylight is universal, and almost as intimately experienced as gravity, few realize how complex it is in its composition nor to the extent to which it is subject to variation in intensity and color.

"* * * In artificial lighting, the production of daylight color is usually secured at the expense of efficiency, the sacrifice depending upon the degree of accuracy required. There is, then, a demand for several compromises, depending upon the relative importance."

In lighting our workrooms, care must be exercised to prevent the casting of shadows by posts, pillars, workers' figures, machinery parts, etc. One of the most common results of improper lighting is the shadow which plays across the work level of the operator and interferes with his vision. Belts often contribute to the false shadow. The prevention of glare is another principle of planning any system.

Waste Sulphite Liquor

A NEW and promising solution of the waste sulphite liquor problem that comes to our attention is the process developed by Mr. Guy C. Howard, a Consulting Chemical Engineer, Stuart Building, Seattle, Washington, and on which patent application has been filed. He has adapted the froth flotation principle as used in ore dressing practice to the treatment of sulphite liquor with a resulting segregation of this waste into three primary products. One is an inorganic sludge substantially free from organic matter and which consists of the lime and sulphur constituents of the liquor. The second product is an organic precipitate substantially free from inorganic matter and which constitutes essentially the true lignin component of the waste liquor. The third is a so-called carbohydrate filtrate carrying the sugars and similar carbohydrates.

Such a segregation is seemingly an important step towards the economic utilization of the several values in this waste liquor, and especially since Mr. Howard's process is a simple mechanical operation using one inexpensive commercial reagent and does not require preliminary concentration of the waste liquor nor heat and pressure in the operation.

Beater Room Notes

By A. D. DIMANCHE

I WOULD like to have this read by the helpers in the beater room, but it will more likely have to be told them by the superintendent. With a little care, less work can be made for the helpers and more clean paper for their employer. Although all specks and dirt do not come from the beater room, about 50 per cent of it does.

I have heard the beatermen cuss and swear because they have so much broke to furnish, when really they are half to blame, especially when the paper is sorted in the finishing room. Of course, the beater engineer must do his part in getting the stuff right in the beaters and Jordans to avoid broke from the machine.

When paper is dropped on the floor it should be picked up right away not when the car is emptied and it has been walked over three or four times. There might not be but one or two spots on it, but that is enough to make a thousand specks that will spoil a lot of valuable paper. It would save money for the employer and labor for the helpers if this dirty paper were thrown in the basket to be burned in the boilers. Many times I have seen helpers sweep up around the beaters or washers after furnishing and throw the sweepings into the tub. One small handful of stock picked up from the floor is apt to spoil several reams of paper. The beater room and all parts must be kept clean in order to make clean paper.

Stock should not be allowed to accumulate and harden on any part of the tub, because sometime it will drop off and get into the stuff just when the beater is emptied. This causes hard stock specks.

The packing boxes and front bearing should be kept clean. When they are not, the black grease is sure to get into the beater. If the back bearing is neglected the black grease or oil gets on the large pulley and is liable to be thrown some distance.

Most paper makers know what a job it is to get the plate and plate box out of a beater—how the thing will stick. The plate box is tapering about three-quarters of an inch in length and the beater bottom is cut away to fit. The sides of the box are milled with a quarter-inch bevel on each side, making the box one-half inch wider on the bottom than the top, so it can easily be seen that only a straight pull will bring it out, because the least pull upwards tightens the box more. If possible, try to get the key out first because that helps tighten the box in the pocket.

Economy in Paper Production Possible with Proper Use of Exhaust Steam

Exhaust Steam Has More Money Value in It Than Is Taken Out of the Live Steam by the Engine. Its Economical Use Is, Therefore, Essential

By JAMES T. BEARD, 2ND

One of the many sources of waste in any industial plant is the exhaust steam. While the Paper Mill is, perhaps, more economical in the use of their exhaust than plants in some other industries, still there is often room for considerable improvement in this respect. This series of stories in the next three issues of The PAPER INDUSTRY will offer some practical suggestions for utilizing exhaust steam more economically. The first instalment appears this month and discusses the cost of exhaust steam and what it means in terms of dollars and cents, when it is wasted.

ONE of the problems facing plant managers, superintendents, and engineers, besides the continuous and reliable service of their mill equipment, is the economical operation of that equipment.

In the paper mill the cost of coal is a considerable percentage of the cost of the finished paper. Any economies, therefore, that will result in reducing the coal consumption will have a very material effect on the production cost of the paper itself.

Suppose, for example, that a ton of paper is turned out for every ton of coal burned. Some mills do better; some do worse. If coal is delivered to the plant at a cost of $6 a ton, a ten percent saving in coal consumption, means that production costs of paper have been cut 60 cents a ton. By the full and economical use of exhaust steam in a paper mill a material reduction in production costs is, therefore, possible and practical.

How is it possible to effect such saving by using exhaust steam? Is not exhaust steam legitimate waste? Has it not already done enough work in developing power to pay for itself—to pay for the cost of making it? What is there in this exhaust steam that makes it so costly? Why will it pay to use it and to use all of it?

These are perfectly legitimate questions. The answers are known to most engineers. But many mill men, while they appreciate the importance of using exhaust steam in a general way, do not realize that, if they throw it away, they are throwing away, perhaps, more than 80 percent of the money they pay every month to the coal dealer. Suppose your coal bill is $5,000 a month. Can you imagine yourself conscientiously poking $1,000 of this into the sewer and tossing another $3,000 into the air? Of course not. But that is what may be happening, if you are not using your exhaust steam and reclaiming the heat that is still in it.

Let's get down to brass tacks and use a concrete case. Suppose you have a 150 horsepower engine in your mill. You may have more than one; or, you may have larger units. Let's just think and talk about this one engine, for the present.

Suppose this engine runs on 150 pounds steam pressure, and suppose the steam is dry. This engine probably has no condenser. By that we mean it exhausts its steam against a back pressure that is equivalent to the atmospheric pressure out doors. If this engine is in good mechanical condition and if your engineer has his valves set properly, it will probably be using 25 pounds of live steam every hour in order to develop one horsepower. If the engine has its full load of 150 horsepower, it will, therefore, be using about 3,750 pounds of live steam from the boilers every hour that it is running.

Thirty-seven hundred and fifty pounds of live steam doesn't mean much to me, and it probably doesn't mean much to you, but I will try to translate it into dollars and cents so that it can mean something to both of us and we can understand each other better.

Let's start at the beginning. This 3,750 pounds of steam is made in the boilers in the boiler house. It is made by burning coal under boilers filled with water. The white heat developed in the furnaces makes the water boil, changes the water into steam and raises the pressure of the steam to the operating pressure of the plant. This is called live steam. It is live, because it has never been used.

But it costs money to do this. We have to buy coal. We have to pay firemen, coal passers, ash handlers, repair men. And we have to pay the overhead.

If the coal costs $6 a ton, with normal operating

and overhead charges, it will cost about 60 cents for every 1,000 pounds of live steam made. Whether your records show it or not this is an actual cost. In some plants it may be more; in others it may be less. The average figure of 60 cents assumes the boilers are normally efficient and are fairly intelligently handled.

To run your 150 horsepower engine for one hour, therefore, it takes $2.25 worth of live steam from the boiler house. If I were a mill manager I would sort of like to know how much value I was getting out of this $54 a day that I was spending for steam to run that one engine. How much steam value is used by the engine? What is the value of the steam exhausted?

But 4 Percent of Heat Used

Modern steam engines have reached a high stage of efficiency, as far as reciprocating steam engines go. Your 150 horsepower steam engine, however, running non-condensing on 150 pounds pressure, cannot hope to change more than 4 percent of the heat that was put into the steam in the boiler house into useful work.

That sounds astonishing. I would not blame you for being skeptical, or for wanting to check me up. But, as a matter of fact, if you are getting more than 3¾ percent of the heat which your firemen put into the steam—if you are getting more than that out of it in the form of useful mechanical power, you are doing exceptionally well. Such is the nature of the steam engine and nothing you can do is going to change it very much. To add a condenser would enable you to do better, but perhaps it would not be practical in your plant. You will, doubtless, have to be satisfied with that 3¾ percent.

In other words, out of every $2.25 you spend for live steam for running your 150 horsepower engine you get just about 8.2 cents actual value in terms of useful work. In the exhaust steam that leaves your engine there is $2.17 for every hour the engine is running—$52 a day. Out of the $54 you spend every day for making steam, your steam engine gives you back only $2, and shoots the remaining $52 into the exhaust pipe.

Of course you are interested about this! I knew you would be. And I think you will also be interested to find out if any of that $52 can be saved. Perhaps you already know that some of it can. Most of it, in fact, can be saved. In your plant, you may even now be saving a considerable portion of it, by using the exhaust steam for heating the drier rolls. But, if you are not using all your exhaust steam, if any of it is going out the exhaust head, or if any of it is going down the sewer in the form of hot water, you are not saving all of it that you can. And you can tell if you are saving all of it by looking at the exhaust head over the engine room. If it is belching out dense clouds of steam you are losing something. Or, if some of the many pipe ends that come out of the walls of your buildings are pouring forth steam, you are also losing something.

The exhaust steam from the boiler house auxiliaries, such as the feed pumps, the blower engines, etc., should be piped to the feed water heater. If this heater is dirty, if the tubes are scaled up, the boiler feed water that is passing through it cannot absorb all the heat out of the steam. Some steam may pass out the roof. This will also happen if the back pressure valve on the heater is not properly set.

If the heater is working properly the feed water temperature should be in the neighborhood of 210 degrees Fahrenheit. Every ten degrees the temperature drops below that point represents a one percent loss of heat. If the feed temperature is only 180 deg. F., there is about a 3 percent loss. This is not, however, 3 percent of the steam required to run the 150 horsepower engine we were talking about. It is, rather, 3 percent of the total coal cost for the plant. If your daily coal consumption is 30 tons and the coal cost is $6 a ton, the 3 percent feed water loss represents $5.40 (3 percent of $180). It would pay to spend a Sunday and clean the heater and to properly set the back pressure valve, in order to save $135 a month.

Use Exhaust Steam for Heating

We have intimated that most of the heat in the exhaust steam can be saved. This can be done by using it for heating. In the paper mill, a large amount of heat is also needed for heating the drier rolls. It is the usual practice to use the exhaust from the main engines for heating the drier rolls.

When the steam leaves the main engine and is discharged into the exhaust line, it still has about 96¼ percent of the heat in it. This heat was put into it in the boiler house and we had to buy coal and pay the men to do it.

Of this 96¼ percent, nearly 83 percent is available for heating purposes. That is, we can take out that much heat from the exhaust steam before it condenses completely into hot water. Unless there are means provided for reclaiming and using the hot water, however, the heat in it must be considered as waste. This loss is usually inevitable.

In other words, 13¼ percent of the total heat that is put into the live steam in the boiler house we must waste because there is no practical means for saving it. We get 3¾ percent of the heat out of the steam in the form of useful work. And we can get 83 percent of the heat back if we use the exhaust steam for heating.

Every hour the 150 horsepower engine is running, therefore, it is sending $2.17 worth of exhaust steam into the exhaust line, of which we can get back about $1.87, if we use all of this steam for heating the drier rolls.

I have heard many superintendents say that they are using all the exhaust they can get in their rolls. That they can't get enough. In some cases this may be true. I have known some cases where it wasn't.

Then there is another point to be considered. The mere fact that exhaust steam is being used and used completely in the drier rolls is not always proof that it is being used economically. There are several conditions that may exist that will prevent economy in its use. These conditions will be discussed fully in a later article.

It is important, however, to remember at this time that if the exhaust steam is not being used economically and if the conditions are not favorable to its use, live steam will have to be used in many cases to make up for the apparent deficiency of the exhaust steam.

It is a common practice of machine tenders to open up the live steam into the drier rolls when the exhaust steam is not drying the paper fast enough. This may or may not be due to lack of sufficient exhaust steam. The machine tender has no time to argue that point. He has to dry his paper and he does it the quickest way he knows how—by turning in the live steam.

This is an expensive proposition. In many cases it is unnecessary and can be avoided by proper methods that will be described later.

Exhaust steam, therefore, costs real money. In a paper mill, in particular, where the cost of steam power is such a large proportion of the cost of the finished product, economies in the use of exhaust steam will be materially felt in an appreciable reduction in production costs.

These economies imply not only the use of all the exhaust steam that is available, so that none will escape, but also the use of that steam economically, so that the maximum benefit can be gotten out of it and a minimum of live steam will be required.

In the next two articles practical suggestions will be offered for accomplishing this purpose—suggestions that have accomplished results in other paper mills and that may be the means of accomplishing similar results in yours.

Wood Preparing Equipment

By HARRY E. WESTON

Assistant Professor of Pulp and Paper Manufacture, The New York State College of Forestry, Syracuse, N. Y.

This is the third installment of Mr. Weston's article on Wood Preparing Equipment. The series will continue through a number of succeeding issues of this magazine.

Barking or Rossing Equipment

IT IS essential that the bark be removed from wood that is to be used in the manufacture of wood pulp by any of the pulp making processes because it not only discolors the pulp and fills the finished paper with dirt specks but also consumes chemicals and steam in cooking without yielding a fibre of any appreciable value. Generally it is not considered as necessary to have wood as clean in the alkaline as in the sulphite or groundwood processes. However, Mr. Edwin Sutermeister states in his book—"Chemistry of Pulp and Paper Making"—when discussing the soda process—"Contrary to the usual belief the inner bark . . . is a source of trouble and should be removed as completely as possible." He also adds—"It cooks with difficulty, uses up fully as much caustic soda as sound wood, and bleaches with far more difficulty than the fibre from the wood. . . . The outer bark also uses up a large amount of caustic and in cooking breaks down into masses of cells which will not bleach to better than a yellowish brown color and hence cause dirt specks in the bleached pulp."

In some instances bark is removed from the logs in the woods before shipment to the mill. This operation is commonly known as "spudding." Portable rossers are being used on some operations. However, the types of apparatus used for this purpose at the mill might be grouped as:

1. Knife Barker (Disc)
2. Barking Drums
   a. Intermittent
   b. Continuous
3. Trough Barker—Thorne

Knife or disc barking machines have been used for a number of years in the wood rooms of many American mills. They are now finding application in mills where clean chips are wanted in the manufacture of high grade papers to trim the logs coming from the barking drums, or in plants where the wood is running very dry, since they offer a positive means of removing such bark. They are also being used in small mills or by small contractors where the output is not sufficient to warrant the installation of a barking drum. Most of them have been designed and built to handle 2 foot bolts, although some machines designed to handle longer lengths are also in use. Likewise special barkers have been manufactured to handle small diameter wood. The diameter range of the wood handled by the various types of disc barkers is from about 3 to 32 inches.

Each barker consists essentially of a properly housed heavily reinforced cast iron disc keyed to a

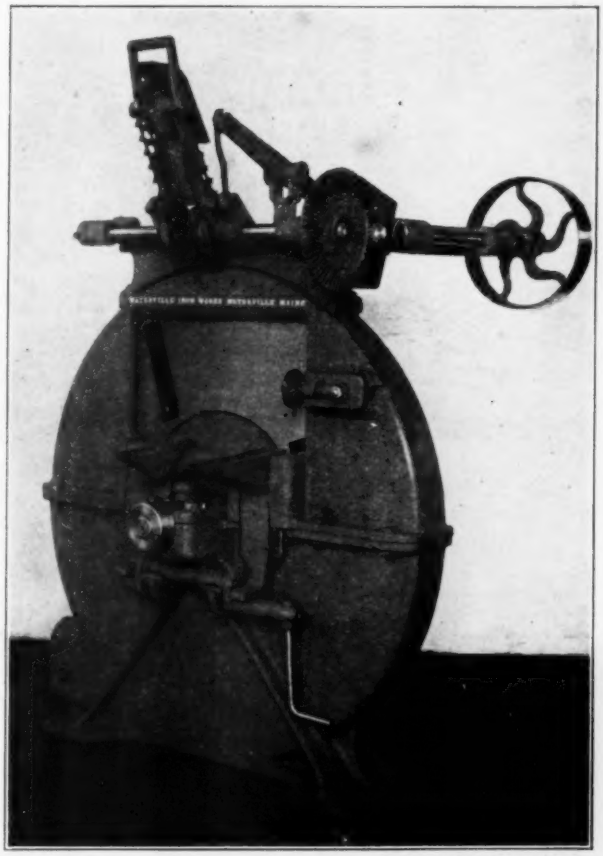
shaft, and in which a number of adjustable knives are set at equal distances radially from the center, together with means of collecting and discharging bark removed from the blocks during operation. The blocks are rotated by hand or mechanically against the face of the rapidly revolving disc and the bark removed by the knives in its face. The important parts of a disc barker are: disc, knives, shaft, casing, log rest, and mechanical attachment for turning the blocks against the face of the disc.

The success of a disc barker depends largely on the construction of the disc. The disc is of cast iron and because of different designs may vary in diameter from 30 to 60 inches. Around the disc is shrunk a heavy steel or wrought iron band to provide additional strength and safety when operating the disc at high speeds. In the disc are cast the knife slots, the number varying with the make and size of barker and to which the knives can be fitted and held firmly in position by bolting to machined pads cast on the rear of the disc. On the back of the disc are also cast or fastened blades or wings which act as a centrifugal fan for cleaning the case of bark and shavings by blowing them a distance of several hundred feet. The wings are sometimes interchangeable and designed for either right or left hand disc in case of the types to which the wings are bolted. The hand of the disc or barker is left hand if the disc turns left or counterclockwise to one facing it from the front or feeding side, and right hand if the disc is running clockwise. The disc is always machined on the knife face, turned true, balanced, and aligned with the case so that it will run smoothly at operating speeds.

There must be proper knife seats for holding the knives. The number of knives varies from 2 to 8 with the make and size of the barker. They are, of necessity, made from highest grade steel. The style of knife will vary somewhat with the make of barker. A number of different types are shown in the accompanying cut.

Hammered steel 2 15/16 inches in diameter at the disc fit is often used for the shaft. The bearings for the shaft should be of such a type that they can be easily oiled and of such construction that they connot easily get out of alignment. Thrust collars of bronze or steel are frequently placed at the back of the disc to reduce the wear and friction.

The design of the cast iron casing is varied by different manufacturers. In some instances the casing is of four pieces and bolted together, whereas in other cases it is only in two pieces that are split horizontally so that the upper half may be lifted off. This allows easy access to the disc, shaft, and bearings. The lower portion of the casing is provided with a discharge outlet through which the bark and shavings are blown when the high speed of the disc within the casing sets up a blast of air. A suitable door or doors (hand holes) should be so placed in the back upper part of the casing that any necessary adjustments can be easily made. Likewise, a hand hole is sometimes provided in the front side of the bottom case near the opening through which the shavings pass. Such an arrangement makes it possible to clean the discharge opening should it become clogged with shavings. The thrust of the log caused



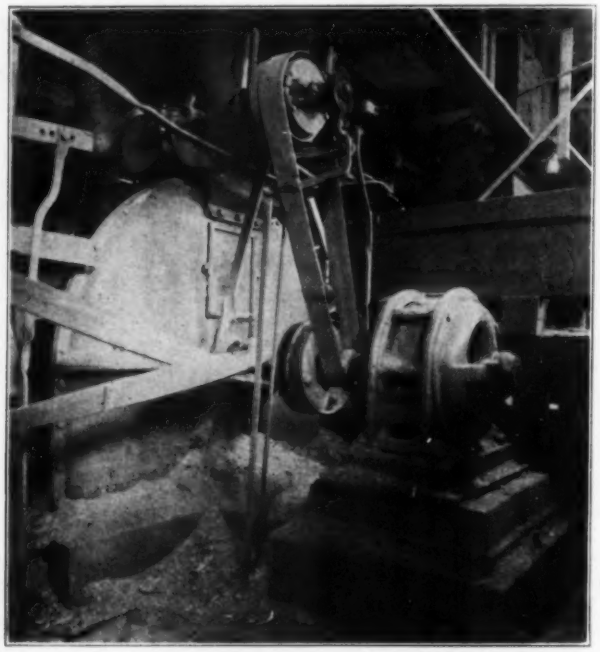
Courtesy Waterville Iron Works.

Disc Barker with Lombard Attachment

by the knives striking it is taken care of by a rotating thrust take-up attached to the top case. Such a take-up holds the wood in longitudinal position for removing the bark. It is located a short distance above the left center front on a left hand machine and likewise above the right center on a right hand machine. A very common type of thrust take-up is shown in the illustration (*Disc barker with Lombard attachment*).

A log rest is attached to the lower frame casing. This rest is often very simple in design and may consist of two stationary brackets located at convenient distances apart to handle the usual length bolts and adjustable only in so far as set screws will permit. Other types are adjustable—that is they can be raised or lowered by means of a revolving cam. Such a device allows the operator to easily handle small or large diameter wood ranging from a few inches to 30 inches on the ordinary 60 inch barker.

Many of the barkers of this type are equipped with automatic attachments for turning the wood. One of the best known attachments of this kind is the Lombard. It consists essentially of a suitable frame bolted to the top of the barker casing. A chain supplied with sharp spurs and driven by a sprocket and gears from a small jack shaft is attached



Courtesy General Electric Co.

Disc Barker Direct Connected to Motor

to the shaft of the frame as is the jack shaft which is driven by a belt from a pulley on the barker shaft. This chain is counterpoised by a weight so that when the attachment is not in use in removing the bark from a block, it flies back out of the way of the operator.

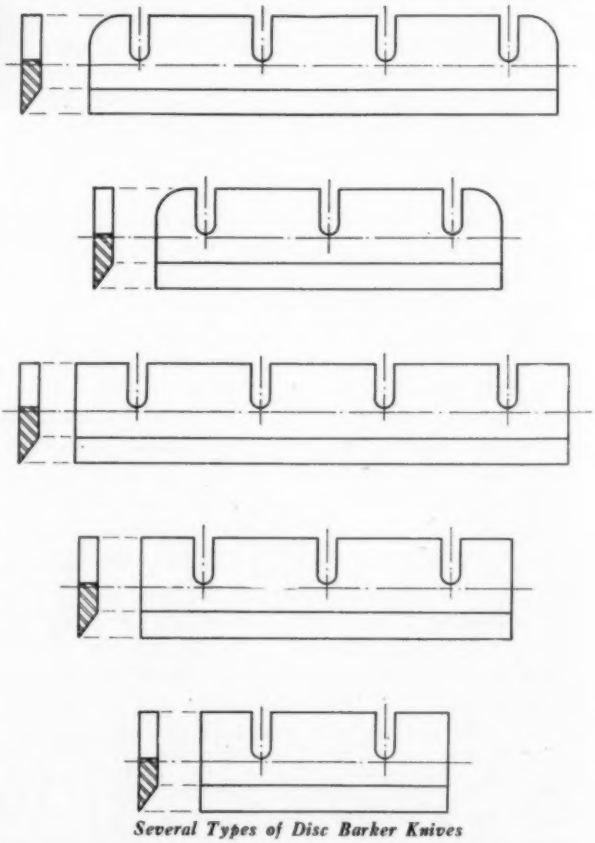
The power consumption will vary with the wood being barked and the speed of the barker. Six to fifteen H. P. has been estimated as the power requirements of a 5 foot disc barker. However, the average power requirements would be from 6 to 10 H. P. and in case of a barker which is directly connected to a motor, the range would probably be from 10 to 15 H. P. This additional amount of power is sufficient to overcome the starting torque due to the heavy flywheel effect of the disc and knives.

Either individual or group drive may be employed in the operation of a disc barker. The individual drive may consist of a motor belt connected to the drive pulley of the barker or of a motor directly connected to the driving shaft. A directly connected motor and barker is shown in the accompanying illustration.

Disc barkers have been made to bark as high as thirty cords of spruce wood in ten hours. A barker capable of handling four foot bolts was necessary to get this capacity. The average capacity of a number of five-foot disc barkers is from ¾ to 1 cord per hour. The output would depend on the skill of the operator and the size, quality, and condition of the wood. Waste ranges from 18 to 21 percent with approximately 10 percent of the waste being bark. The waste is greater as the diameter of the wood is smaller, and vice versa. A careless operator may cause the loss to be even higher.

An operator should be instructed as to the best methods of operating a barker and should be acquainted with its hazards. A disc barker equipped with an automatic attachment is simple to operate. The log is first placed in position on the log rest, the chain is then brought down upon the surface of the block and the spurs coming in contact with the block cause the block to revolve with an even motion. The bark and waste portion of the wood pass through the knife slots into the opening behind the disc from which they are blown through the discharge opening in the base by the action of the wings or blades on the back side of the disc. This material is frequently blown into a boxlike compartment, somewhat funnel-shaped, and conveyed from this compartment to the boiler-house where it is burned. As soon as the block is sufficiently well barked the chain is released and the block removed by the operator.

Some machines are run without an attachment.



Several Types of Disc Barker Knives

The operator, as in the preceding case, places the block upon the log rest, and then rotates it against

the face of the disc by hand. Experience teaches the operator how this can be done most efficiently and with the least amount of danger to himself. A hand-feed disc barker as well as many equipped with an attachment which raises out of the way of the operator will bark nearly all shapes of wood. It is sometimes necessary, in order to prevent excessive waste, to remove a small portion of bark in roughly shaped blocks with a hand axe.

Care should always be taken in the plant to keep the rapidly revolving disc (600 to 700 R. P. M.) in balance. Otherwise, the machine will jump and bound and will destroy the bearings. It is usually unnecessary to use various widths and weights of knives, but in case of necessity each knife should be gauged or weighed and then placed in such a position as to give proper balance to the disc.

As soon as a set of knives become dull they should all be removed and reground. Dirt, frost, etc., are very hard on the edge of a barker knife. An emery wheel, with limewater to prevent drawing of the temper, is commonly employed for grinding. The knives should always be ground in sets and should always be finished with an oil stone. The finishing with the oil stone removes the burr left by the emery wheel. They are then ready for replacing in the disc. Gauges should always be used so that the knives may be properly set. One-eighth of an inch from the face of the disc is usually sufficient for economic handling of the wood.

A Correction

On page 316 of the May issue of THE PAPER INDUSTRY there appeared an illustration of a three-saw pulpwood slasher. Credit for this should have been given to D. J. Murray Manufacturing Co.

Cost and Factory Accounting—Part IV

By H. M. GRASSELT

American Writing Paper Company

TRUE costs are not based upon guesswork. They must be determined by methodical recording of facts and details and a thorough analysis of every item and operation necessary in the manufacture of the product. Cost analysis has for its object greater economy of production, to be manifested in lower expenses and maximum results quantitatively and qualitatively. It implies systematical study of machines and methods with a view to eliminate waste and determine the exact capacity of each unit, as well as the cost of each process of manufacture of a commodity with absolute accuracy.

Correct standards for each department and unit enables the manufacturer to gauge their efficiency by comparison to past results, control operations easily and adopt corrective measures without delay whenever the necessity arises.

A systematical cost analysis and collecting of details requires departmentalization of a plant. That means the activities of each department and unit must be minutely defined and the lines of demarcation applied in such a manner as to precisely determine the cost of each individual process. Each department or unit produces the raw material for the following process. A few well-adapted forms for the entry of details must cover the respective operations and their summaries represent the total cost of the particular process or phase of manufacture. This departmental cost will follow the flow of operations, each department will add its share until the product is ready for shipment and final summaries exhibit the total factory cost.

Accordingly, for cost analysis and gathering of cost data purposes, a fine paper mill, for instance, has to be divided into several principal departments as follows:

1—Half Stuff Department
2—Rough Paper Department
3—Finishing Department
4—General Finishing Department
5—Steam and Power Plant Department
6—Repair Shop
7—General Plant, and
8—Finished Stock and Shipping

Within each department exist, of course, various sub-departments and sub-processes that have to be covered by records in order to provide all necessary details for the computation of departmental costs.

In paper mills there exist, generally speaking, two distinct methods of collecting of cost data, one being the "continuous or tonnage method," the other the "production order method." The former may be applied with advantage in newsprint, bookpaper, board and similar mills that, as a rule, have long, uninterrupted runs of a particular grade. However, even here cost periods should be of comparatively short duration, preferably of two weeks or at any rate of not more than one month, in order to obtain a better and quicker check on all operations. It is obvious that results of shorter cost periods disclose more readily and better irregularities than those of long ones and thus will compensate for the little additional work they may incur.

Manufacturing conditions in fine paper mills point toward the application of the "Production Order Method." Rag content bonds, ledgers, papeteries and similar grades are ordered mostly in less than carload lots and the process of manufacture conse-

quently requires frequent changes of furnishes and production orders. Hence, the production order method is here the logical procedure for the attainment of accurate costs of each particular grade and run. Of course, all orders on hand at the time of the run for one specific grade and color may be incorporated in one production order instead of issuing a production order for each small lot.

Practically every manufacturer of fine papers has tried to overcome the handicap of those small, unprofitable runs by keeping certain standard lines in stock and making large runs of them when necessary. This method is of inestimable commercial value and its advantages will be explained in a subsequent chapter in connection with details pertaining to Finished Stock and Shipping.

1—Half Stuff Department

This department embraces (a) ragroom; (b) bleach boilers; (c) washers; (d) pulpers; (e) broke beaters and (f) drainers. The cost details of each operation within the thus divided department are entered into several records and their totals summarized represent the total cost of half stuff. Standard rates —Employees' Hours (E. H.) and Machine Hours (M. H.) respectively—as explained in a preceding chapter, are used in determining the cost of labor and overhead charges.

(a) Ragroom. The efficient and economical preparation of rags for half stuff is contingent upon the layout of the ragroom and effective supervision of operations. Machines and operations should be arranged conformably to the flow of materials and permit of uninterrupted operations with a minimum of intra-departmental trucking.

Ragroom activities proper include thrashing, sorting, cutting and dusting. Auxiliary activities are boiling, washing and draining. These activities are regulated by the grades of rags used; new and high-grade rags may require fewer operations than old and cheap grades. The ideal arrangement of a ragroom would be to have the rags stored on the floor above the sorting room, in close proximity to the thrasher. After thrashing, the rags would fall down a chute in the rear of the sorting room upon a platform, from which they are easily pulled into cars and removed to the sorting tables. The latter should be arranged sufficiently apart to leave enough room for unhampered motions of the sorters and the movement of cars or baskets. Square sorting tables with one sorter on each side have been found of decided advantage, as this arrangement allows effective operations and eliminates congestion. A sufficient number of female inspectors should be employed to thoroughly examine the sorted rags. Male helpers will remove the filled baskets of sorted and examined rags to the scales where they are weighed and the weight entered into a sheet with the number of and a column for each individual sorter. A check of the daily entries and comparisons show the skill and industriousness of every sorter.

A cutter at the other end of the ragroom with adjacent dusters, whence the cut material will be carried on belt conveyors to the bleach boilers, completes the efficacious arrangement of the ragroom.

Good ventilation, a restroom for women nearby and dust-proof closets for clothes, supplement the arrangement and hygienical requirements.

It will pay to closely survey the ragroom with a view to improvements. Whenever possible, manual labor is to be replaced by mechanical conveying devices. A capable ragroom foreman, who knows grades and can handle help, will be in a position to attain maximum production and have the stuff free from all foreign substances. He will know what constitutes a fair day's work and see to it, that his sorters reach at least the required minimum.

Wages. There are various grades of rags that may be sorted profitably at piece-work rates. If a mill uses a limited number of grades that can be had at all times in a fairly uniform quality, the introduction of piece-work rates may prove of advantage to the employee as well as the employer. However, when it is impossible to obtain rags in average uniformity and every lot requires different treatment, day work rates will prove to be the best method of payment. Some mills offer a bonus for all tonnage in excess of the required standard of daily output.

RAG TEST REPORT FOR LOT No.....

Grade.....Invoiced.....Pur. Order .....

No. Bales.....Received Weight.....Invoiced Weight.....

Date Tested.....No. of Bales Tested.....Weight.....

Sortings	Weight	Per Cent	Sortings, Cont'd.	Weight	Per Cent
No. 1			Muss		
No. 2			Dust 1		
No. 3			Dust 2		
Blacks			Shrinkage		
Woolens			Tare:		
Quilts			Hoop Iron—Wire Rope		
Moisture			Bagging, Paper		
			Total Tare:		
			Grand Total:		

EXCESS TARE

Tare	Per Cent	Pounds	Unit Price	Value		Charged Bank
Calculated						
Allowed						
Excess						

Remarks:

Form No. 1

Storage and Inspection. The incoming rags are to be weighed and each bale provided with a tag bearing

the lot number, grade of rags, weight of bale, name of shipper and date received. The foreman should be supplied with a "Lot Book," which shows the preceding mentioned details pertaining to every lot, and has in addition a column for the entry of the date the respective lot has been used. Such a book represents a means of keeping a complete record in the ragroom besides the perpetual inventory in the office.

Systematic storage helps a good deal to expedite operations and reduce costs. Lots should be kept together and not mixed indiscriminately.

Tests. An external inspection of every new lot must be made before the bales are removed from the car. The next step is to test about ten bales out of every carload lot (smaller lots in the same ratio) as to tare and sortings. The interspersed Form No. 1 represents a convenient record for the entry of test results.

Purchase contracts, as a rule, will state the permissible percentage of tare and sortings; it is, therefore, imperative that tests be made with extreme care and overages charged back to the vendor.

BLEACH No.....

Date.....192...

Lot No.	Grade	No. of Bales	Baled Weight	Cost per cwt.	Cost Total	Waste and Sortings	Dressed Weight
Totals:							

		Recoveries	Value
Credit for Recoveries (deduction)			
Net Cost of Rags		..lbs Muss	
Rag Dept. / E. H. Cost ..... E. Hrs. @.....		..lbs. Dust	
		..lbs. Scrap Ir.	
		..lbs. Bagging	
CONVERSION SUPPLIES:		Total as credited	
Soda Ash.....lbs. @.....			
Caustic Soda.....lbs. @.....			
Lime.....lbs. @.....		Bleach Boiler	
		Filled	Date / Time
Bleach Boiler Dept. Cost			
Total Cost of Boiled Rags		Emptied	
Cost per 100 lbs.		Hours Cooked	

RECAPITULATION

Baled Weight of Rags, lbs.	.....	Ready for Washers:	
Dressed Weight of Rags, lbs.	.....	.....Cars	
Waste and Sortings, lbs.	.....	Average Weight per Car, lbs.	.....
Salable Recoveries, lbs.	.....	Average Cost per Car, $	.....
Missing, lbs.	.....	Posted to Inventory	.....
TOTAL, lbs.	.....		

Form No. 2. Regular Index. Reverse Side with Tally of Rag Weights

Costs. A comprehensive and accurate analysis of rag department costs can be attained with comparatively few forms. The interspersed specimen of a record (Form No. 2) is used for the entry of all details pertaining to materials, direct labor and overhead expenses (Rag Department Cost, E. H.) conversion supplies, etc. and covers all operation expenses up to the completion of a "Bleach."

The rag department cost is found by multiplying the employee hours with the established standard rate. A standard rate for the cost of a bleach has to be determined, entered into the column provided for "Bleach Boiler Dept. Cost" and added to the items, thus completing the total cost of boiled rags.

It will be noticed that one column is provided in this form for the entry of deductions for recoveries. These recoveries (Muss, Dust, Scrap Iron and Bagging) have a definite value and their calculated proceeds must be deducted from the cost of the rags used in a bleach.

The reverse side of Form No. 2 is ruled for the entry of a tally of rag weights and has columns provided for Lot No., Bale No., Baled Weight, Total Baled Weight per Lot and Dressed Weight. The ragroom foreman will make all entries concerning materials, time and conversion supplies and forward the record to the office as soon as respective bleach has been completed. The cost department will calculate the cost of the boiled rags, now ready for the washers, and also make the necessary entries into the perpetual inventory cards.

Look for the Light

ONCE there was a man who thought he was "licked." His "boss" jumped on him every day—found fault with everything he did, bruised him every time he got a chance. So the man made up his mind he would quit.

After a particularly rough session with his boss, he said, "Well, I guess I can't do this work."

Then his boss did jump him. He said: "Blank, I'm ashamed of you! What do you think I've been pounding you for? Don't you know me well enough to realize that I wouldn't spend time beating a man if I didn't think he had in him the kind of stuff that's worth beating? I'm ashamed of you! Here I've been nagging you and bruising you and pounding you to get you in a frame of mind which would make you set your teeth together and say to yourself, 'I'm going to lick this job! I can do this work and I'm a-goin' to,' and now you come to me and talk quit talk!"

Then the man began to see a great light. And he shut his teeth together and said, "I can do it!"

And he did.

Today he's one of the sales managers of a big concern.

MORAL—Look for the light when your boss begins beating you up. He may have a reason. Find out what it is before you think of quitting.—Maxwell Messenger.

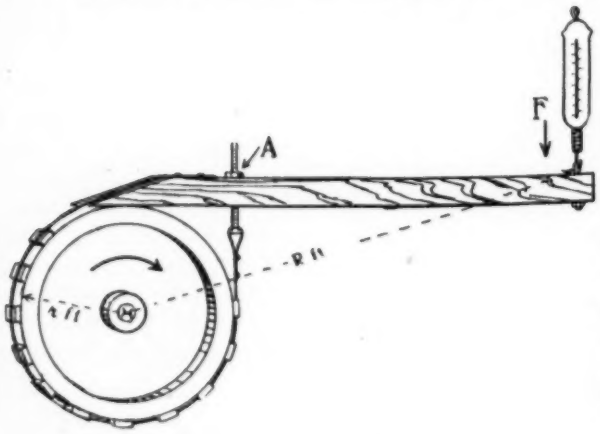
Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Don't Test Engines in This Way

PAPER mill engineers sometimes have occasion to test engines or motors and it occurred to me that they might make the same error that others have made, as shown in the sketch herewith. Not long ago I came across an article in a prominent journal showing a sketch like this one.

This sketch, I wish to emphasize, is incorrect. The dotted line from the center of the pulley to the contact point in the eye-bolt—the connecting point with the scale—should be a perfectly horizontal line and should not slope upward as shown here. Because of the fact that this line in the sketch is not horizontal, whereas the spring scale is vertical, the reading on the scale will not be a true measure of the pull on the eye-bolt because it is not at right angles with the dotted line. By making the position of the spring scale such that the line will be horizontal—by lowering it—the effective pull as registered on the face of the scale will be correct, and the following rule can then be applied for determining the horse-power of the engine or motor being tested:



"Multiply the horizontal distance in feet from shaft center to contact point on scales by the pull on the scale in pounds, then by the revolutions per minute, and then by .00019. The result is the brake horse-power."

As an imaginary case let us suppose that we find the horizontal distance to be 3 feet, that the pull on the scale is 100 pounds, and that the motor makes 1,000 revolutions per minute. Substituting these values in the above rule, we get 57.1 horse-power.

The principal thing to look out for, as mentioned above, is: Be sure that the line R is "square" with the direction of pull. That is, if the pull is straight up and down, or "vertical," the line R must be absolutely horizontal.

A Modern Paper Mill Power Plant

CONSIDERABLE interest is being shown in the new paper mill power plant now nearing completion which is being built by the Bryant Paper Company, Kalamazoo, Mich. The ultimate capacity of the plant will be 8,000 kilowatts. It will supply power, steam and hot water to the entire mill, which is made up of four divisions. Heretofore, individual boiler plants were scattered about the mill. They will all be replaced by the single plant.

A 2,000 kilowatt uniflow engine will be used. Four Stirling boilers to operate at 300 pounds gauge. Steam will be superheated 200 degrees. The Combustion Engineering Corp. furnished the Frederick underfeed stoker for firing Kentucky or West Virginia coal. Diamond soot blowers will be used, Clarage forced draft fans, Green Fuel Economizers, Worthington and Union Steam Pump Company pumps, Paterson-Kelly Company heaters, R. H. Beaumont Company coal handling system, Nordberg duplex uniflow engine, Westinghouse Allis-Chalmers generators, Permutit Water Softening system, Elliott Company Deaerating system, S-C Boiler regulator system, and Republic Flow Meter Company steam flow meters.

Ample provision has been made for storing coal. It is said that 40,000 tons of coal may be stored.

No detail has been overlooked in making this one of the most efficient and most economical paper mill power plants that can be made.

High Steam Pressures

WHILE it might be dangerous business, so far as my reputation is concerned to make any predictions, still I am willing to put myself down in black and white as believing that engineers will eventually settle down on about 600 pounds as the economical maximum steam pressure. I believe that in using 1,500 pounds or 3,000 pounds we are overshooting the mark and that we will come down to a more common-sense pressure. Germany demonstrated, for instance, that it is possible to shoot some seventy miles with an enormous special cannon, but, so far as I know, no nation is building such guns at the present time, because they are impracticable. In the same way, my belief is that the higher we go above 600 pounds the more impracticable will the boiler be.

My reason for this—shall we call it pessimism—is the same old reason that confronted James Watts—leaks. Watt's principal trouble was the prevention of leaks. One of the principal troubles today is the stopping of leaks. And as we advance the pressure, the greater the tendency to leak. We have nu-

merous advantages today over James Watt, the principal one being welding. However, will it be economical to weld all of the tubes into the boiler, all of the handholes and manholes, etc., so as to prevent all possibility of leakage? The writer recently had an experience with a manufacturer of refrigerating machinery using ammonia. It was found necessary to weld the boilers so as to prevent all leakage. There was no riveting or bolting whatever. But when it became necessary to remove the coils inside of the boiler, the entire boiler had to be cut in two and the parts replaced and then welded together again, which was very expensive. Besides, in spite of the boilers being entirely welded, leaks would occur anyway in the piping which contained ordinary ammonia joints. I fear that the same kind of trouble will be experienced with steam boilers and steam piping under extremely high pressure.

Belt Tighteners Are Costly

IN A recent number of a prominent trade paper I found this paragraph:

"While some mechanics claim they prefer cross belting to straight belting on a drive, because it gives a little more lap around the pulley, this is really a false idea. If more lap around the pulley is desired, a tightener offers the better way. The only excuse for crossing a belt is to get a reversal of direction in the drive. To purposely design equipment for a cross-belt, on the theory that it drives better than a straight one is not good practice."

That is true enough, but I take exception to the sentence, "If more lap around the pulley is desired, a tightener offers the better way." A tightener means that the belt is to be tighter. That is wrong. Tight belts should not be tolerated.

If an idler is used—which is often merely another name for a tightener—increased lap may be obtained, but even then the belt may be somewhat tighter.

The cost of the idler, also, should be considered. Why buy a new idler when the problem can be solved by simply using larger pulleys? Larger pulleys mean "smaller and less expensive belts." The belt speed will be higher, of course, but that is not liable to make any serious difference, so long as the speed is not higher than a mile a minute.

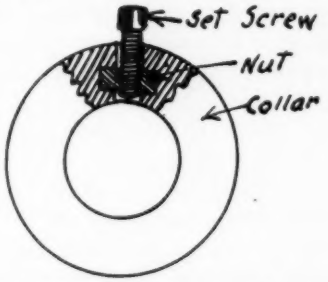
I know of one case, for example, where a belt tightener costing $500 was installed to make a large drive belt slipless. It gave trouble from the start in causing the pulley bearings to heat, and so the engineer began looking around for some other solution. He was advised by one salesman to treat the belt, make it soft and pliable with a belt treatment, make the belt run slack and easy and eventually he would be able to remove the tightener entirely.

The engineer followed the salesman's advice, treated the belt, found that he could gradually relieve the tightener load and in due time removed the tightener altogether. For a few cents, in other words, he could have saved the $500 spent for the tightener.

Making a Collar Out of Babbitt Metal

THE sketch herewith shows how a collar can be made out of ordinary babbitt metal. It will serve the purpose about as well as any other collar.

Before pouring the babbitt metal, place a nut at the top in the position indicated with the set screw



already in it. The set screw can be wrapped with paper or covered with putty so that the babbitt will not bind it tightly in place.

If a non-projecting set screw is wanted same can be made as readily as a projecting screw type.

Moulds may be made entirely of pasteboard and paper or pasteboard and wood.

Mandrels Are Not Always Necessary

I HAVE often ridiculed the idea of using a special mandrel for babbitting bearings, and in most instances I am still against such practice, because in my experience I have never had a failure by using the shaft itself as a mandrel and pouring the babbitt directly around the shaft. In general, the way to do it properly is to do it quickly. Take all the time you want for preparing the molds, and prepare them in such a way that the babbitt can be poured almost instantly. By pouring quickly all sides of the shaft are heated simultaneously, expansion is the same all over and there is no spring in one direction. The danger that must be overcome is the danger of warping, which will occur when the babbitt is poured slowly and on one spot on the shaft. That spot becomes highly heated, expands, and springs the shaft in such a way that the hot spot will be on the convex side. Before the shaft can spring back, the babbitt solidifies and holds the shaft in a bent condition. Sometimes this bend is very slight, so slight that the shaft can be turned any way, due to the clearance allowed, but the bend can be actually "felt" with the hand, because in one position it turns more easily than in any other.

To prepare the shaft for the mold it is a good plan to burn some oily waste and create an oil soot on the shaft. This soot serves a double purpose. It provides the necessary clearance medium, and it is a good insulator against heat. If you have ever had

anything to do with boilers, you know how effective soot is as an insulator. If you fear that the soot isn't thick enough, wrap a thickness or more of thin paper around the soot. Then you will have a double insulator. A string tied around the paper further forms oil grooves that are generally of value in a bearing.

Another difficulty that attends the use of a separate mandrel is that the shaft wears with use, whereas the mandrel doesn't wear. That is, if we have a two-inch shaft to begin with, and a two-inch mandrel sawed off the same shaft, we can do a very good babbitting job the "first time," because we are absolutely certain that the mandrel is the same size as the shaft. We then grease and lay the mandrel away for future use. But the shaft runs for a year and wears slightly. Then, in bringing the mandrel back into use for rebabbitting the bearing, the finished job may come out too loose. To avoid this difficulty, first-class millwrights make special wooden mandrels for every important job, modeling the wooden mandrel to the exact size of the metal shaft. It is well enough for manufacturers to use mandrels. I would use them myself if I were a manufacturer. But the millwright should use his own judgment as to whether or not a mandrel is necessary on special jobs and if it will pay to make one.

The Birth of Parchment

THE history of the making of parchment paper reads like a romance. Like the discovery of blotting paper, fountain pens, and many other good things in the world, parchment comes to us as the result of an accident.

Way back in the sixteenth century a German chemist carelessly spilled acid on the sheet before him. The reaction set him thinking.

In a twinkling there was produced almost an exact counterpart of the papyrus of the ancient Egyptian on which was inscribed with infinite pains the history of those early people.

Further experiment along this line using acid on paper stock made from a basis of cotton fibre, developed paper similar to what we now call parchment. It was some years before anything was done in Germany in developing this paper, there being no known uses for a product of this nature.

About 50 years ago the parchmentizing process was introduced into America. Its manufacture, taken up in the East, at first in a small way, has now developed into an important branch of the paper industry.—Making Paper.

A generous man doesn't give his friends away.

Sodium Fluoride an Effective Pulp Preservative

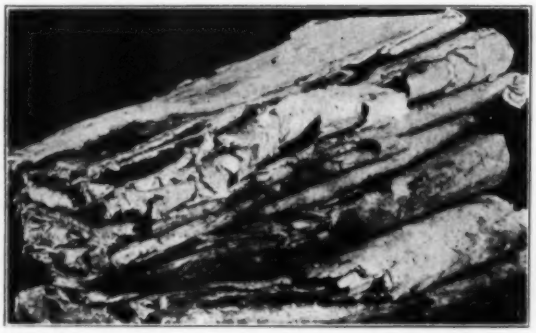


Figure 1

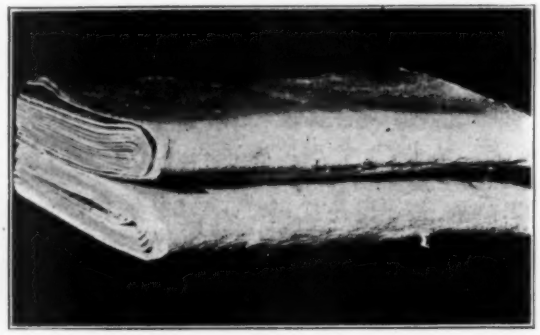


Figure 2

Figure 1 shows laps of untreated groundwood pulp discolored by molds and crumbling with decay after being stored in a damp basement for six months.

Figure 2 shows groundwood pulp which is clean and uninfected even after being inoculated with a mixture of fungi and stored for 2 years—more than twice the average storage period—in a shed where conditions were very favorable for decay. These laps had been treated with 54.7 pounds of sodium fluoride to the ton of dry pulp.

Commercial tests have shown that the growth of fungi and molds can be effectively retarded with as little as 16 pounds of sodium fluoride to the ton of pulp at a cost of about $1.90 per ton. The cost of sorting good from infected pulp alone may exceed this figure by from fifty cents to a dollar per ton, not to mention the actual cost of the decayed pulp.

(Photograph by Forest Products Laboratory, U. S. Forest Service)

Waste in the Pulp and Paper Industry

The Paper Mill

By B. T. McBAIN

Third Vice-President, Superintendents' Association

BY "THE PAPER MILL" is meant that part of a pulp or paper manufacturing plant from and including beaters and paper machines. Therefore, this short analysis of the waste problem will hit all paper mills whether they make their own raw material or not.

To begin with, if the raw material is charged to the paper mill on the basis of so-called bone dry weight, divided by .90 or at about 111 per cent air dry, there is waste because there is not a paper machine that averages paper with 11 per cent of moisture in the shipping rolls or sheets and gets away with it. Of course, if this waste simply is one of bookkeeping between the pulp and paper mills of one company it is one matter, but if the pulp is purchased from others, it is a horse of another color.

Most mills in the furnishing of their beaters use fresh water, while considerable stock can be saved, and saving stock is saving money, if return or white water is used to furnish and wash down the beaters.

Some mills and this "some" is quite a large number, use hot water in the beaters. If there is no other use for this water there might be a saving in time sufficient to cover the loss due to not using white water, but those mills with a steam pipe always open direct into the beater tubs are wasting far more than any of them imagine.

Many mills are using junk machinery of many kinds and varieties, not designed for the purpose used and here again is waste in power, and in many other ways.

Many beaters in use today could be profitably junked, and many others I venture to say will be found not to be over 50 per cent efficient as compared with those with the rolls properly ground and with bed plates and bars properly adapted to the stock being refined.

I know there are many mills today using Jordons with from 25 per cent to 50 per cent more power demand than necessary, chiefly because of improper speed. Others are not getting the results they would if the Jordons were properly filled, both shell and plug, to handle the sort of stock being used.

In the transmitting of power to beater and Jordons from water wheel, or engine or motor very poorly designed shafting will be found in many mills, water wheels will be found overloaded and running at inefficient speeds, causing waste. Proper cleaning and painting of these wheels at regular intervals with sand blast inside and out will save.

Going on to the beater chest, waste results in power because of improper agitator, old worn out or overloaded pumps, piping too small, or with too many elbows, which is the same thing in effect.

The design of chest is such as to cause waste when changing color or washing up.

The outlet to pump is so designed that foreign matter in the stock will cause waste.

Many machines are arranged so the stock goes from beater chest through the Jordon to machine chest and then it is again pumped to the mixing box before being screened.

Loss of time, stock and power results when changing color or grades as against one pump chest through Jordon to mixing box and screens, and the loss due to improperly Jordonned stock with the machine chest when stock is too free or too short is overcome.

On the paper machine there are many points of waste:

If all white water is not being used on the coarser grades, there is waste.

Some mills are still equipped with screens requiring many times the amount of power of up-to-date screens.

Many mills are still trying to make grades of paper with the old type of couch and press, while suction couch and press would allow of better quality and more of it without the waste now resulting.

Most machines are equipped so the saveall under the couch can waste to the sewer, if it overflows, and it does overflow often.

Many mills do not even put this overflow over a saveall, although absolutely no overflow is required with proper design of the pit under the wire and use of all white water, thus cutting out all this waste.

At the presses much could be saved by removing even 1 per cent more water before pulling the paper to the dryers and should be saved, for each per cent of moisture runs into hundreds of dollars wasted each month in every mill.

At the dryers, proper drying systems will save waste, and keeping the faces of the dryers polished will save even more waste.

At the calenders as well as at the presses, a good roll grinder and the grinding of rolls at regular intervals will save waste.

An up-to-date reel will save much paper at the reel, while a properly designed and maintained winder would help many of the paper machines in America save waste.

Editorial Comment

By WILLIAM SIBLEY

Business in Presidential Years

BUSINESS in 1924 may be below normal; if so, it will not be because a President is to be elected. It may be a year of real prosperity but not because it is a presidential year.

Excepting only the reactionary 1920, there have been five presidential years since 1880 when business was above normal and five presidential years when business was below normal. In all these years, except 1896, the business trend continued upward or downward, unaffected by the period of election.

In 1880 business was approximately 10 per cent above normal.

In 1884 business started 10 per cent below normal and continued to recede until it reached 20 per cent by the middle of 1885.

In 1888 business was 8 per cent above normal.
In 1892 business was 10 per cent above normal.
In 1896 business was 12 per cent below normal
In 1900 business was 5 per cent below normal.
In 1904 business was 2 per cent below normal.
In 1908 business was 3 per cent below normal.
In 1912 business was 6 per cent above normal.
In 1916 business was 15 per cent above normal.
In 1920 business was reactionary—not complete.

Five lean years—five fat years—one reactionary year. It would seem that the old superstition that a presidential year means poor business is a myth.

Building Construction for 1924

IT IS estimated by the "Architectural Forum," a leading trade journal in that field, that during 1924 expenditures for new buildings in the United States will be in excess of $5,560,000,000. It is of interest to know that the middle states group leads the six sections into which the country has been divided. The North Atlantic states rank second in this estimate, they being about 33 per cent below that accorded the Middle States.

This estimate gives schools the lead over any other single division which seems to us very gratifying. It is estimated that over $802,000,000 will be expended on schools this year. Hotels are second with a sum exceeding $635,000,000. Apartments rank third, being accorded $568,000,000.

Taxes and Dividends

AT THE present time the railroads of the United States are paying out more in taxes than they are in dividends. The $301,003,227 they contributed to the public treasury in 1922 is 11 per cent greater than the $271,576,000 they turned over to their security holders in interest and dividends. In the last ten years, railroad tax payments have increased 135 per cent and dividends decreased 16 per cent.

The great bulk of present-day railroad effort results in direct contributions to the general welfare rather than in corporation profits. The railroads are really working harder for the general public than they are for themselves.

Railroads have been likened to the arteries in the human body. It is an excellent comparison. Without arteries we would cease to be. Without railroads, or adequate transportation, prosperity would cease to be.

Let us be militant in our efforts to save the railroads from unwise legislation. When a few senators propose higher taxation, lower rates, or other detrimental legislation, let us give them a demonstration of aroused public opinion.

Providential Interruption—?

GUY M. WALKER, lawyer, financial authority, resident of China for ten years, and recognized authority on Oriental affairs, in a letter to the Wall Street Journal said:

"For the truth is that there was a great emergency. It is true that danger was impending. The threat of Japan was known to the army and navy of the United States. Japan had been accumulating and was then accumulating an oil reserve that staggered the world, and nobody knew where it was going. It was imperative that the navy of the United States make counter preparation. The threat of war was temporarily postponed by the calling of the Disarmament Conference at Washington in December, 1921, and the fact that Japan had forced upon her at that conference her absolute isolation. But even that did not deter her in proceeding with her plan to attack the United States on the basis of the Californian Alien Land Laws.

"The thing that dissipated the Japanese war cloud was the earthquake, which destroyed the enormous subterranean tanks in which the Japanese government had stored their oil supply. The breaking of these tanks filled Tokyo Bay and the creeks of Tokyo and Yokohama with Japanese naval oil, which burned in that enormous blast which destroyed 100,000 people from the oil alone in a few hours.

"It was the destruction of these Japanese naval oil reserves and that alone that ended the threat of danger to the United States Navy in the Pacific which made it imperative that the Navy Department take

—— on Timely Subjects

the action it did in getting the oil reserves where they were in tanks at Honolulu."

When the full particulars of the Japanese quake came to this country we pondered considerably the cause of the tremendous sweep of flames and the overpowering smoke which smothered thousands of people. We know that no ordinary conflagration would do this—that San Francisco experienced no such result of her quake. If Mr. Walker's statement regarding the subterranean stores of oil are true, our wonderment is dispelled.

Assuming that this letter is authentic gives arise to thoughts that the quake might have been a divine interposition to destroy the possibility of Japan making war on the United States.

And yet we have those among us who advocate complete disarmament!

Investigations

SOME new investigations will start and continue through the summer. Practically all of the old ones will be continued. Teapot Dome will continue to boil as long as the radical element can keep a fire under it. The Revenue Bureau, Shipping Board, Bureau of Engraving, Aircraft, Attorney General's office, Prohibition, and others will come in for their share of trouble and abuse. We predict that the insurgents will make this year's campaign contributions a subject for investigation. The principal object of it all is to shatter confidence and faith in the government to the extent that enough votes may be pulled away from the two old parties to elect the radical element to office this fall.

And this country will be safe from investigations and scandal only when it realizes that no one man—no one department—no one party is to blame for present conditions. There will be investigations until the realization comes that we, the American people, merely see our reflection in Washington. The Washington situation is merely typical of nation wide conditions.

The Communist proclaims openly:

"To hell with all government, all churches, all synagogues."

Violators of law, whether it be prohibition, speed laws, child labor, or other laws, say by their acts which speak louder than words: "To hell with all government and all laws contrary to our personal desires or to the gratification of our individual pleasures."

Those who violate the prohibition law, in any place, merely to satisfy his personal desires or personal profit, must not blame him who, in Washington, breaks a law to the profit of himself. Those who have broken faith with the Constitution of the United States by selling or buying illicit booze must not censure the man who breaks his oath of office and sacred trust to sell or buy some oil.

If you don't like a certain law—have it repealed in accordance with the lawful procedure laid down in the Constitution of the United States. But as long as it is a law of the land—obey it.

Prosperity Shown in Huge Freight Movement

MORE cars were loaded with revenue freight during the first thirteen weeks of this year (January 1st to March 29th) than any corresponding period on record. The total for the 13 weeks was 11,587,274 cars.

This was an increase of 270,534 cars over the corresponding period in 1923, which had set a record in itself. Compared with 1922, it was an increase of 1,686,137 cars.

Loading of revenue freight for the week ending March 29th totaled 907,548 cars, of which:

Grain products totaled ..... 35,993 cars
Live stock totaled ..... 28,612 cars
Coal loading totaled .....154,680 cars

The Handbook of Life

JOHN FOX, JR., wrote the "Lonesome Pine" and more than one million copies were printed and sold.

Louisa M. Alcott's books had distribution in excess of two million.

More than ten million copies of "The Man Without A Country" have been printed and sold.

"Uncle Tom's Cabin" was translated into 23 different languages.

But the Bible has been translated into more than 700 languages and dialects, and somewhere in the world, a copy of that Handbook of Life is purchased every second in every working day. It is estimated that more than 26,000,000 copies of the Bible are sold annually.

When one becomes angry, his intelligence rarifies. The more rarified an intelligence becomes, the more sensitive it is to its relations with its superior—the intelligence that has remained unangered.

Pulp and Paper Mill Superintendents Hold Fifth Annual Convention

PROGRESS has characterized the growth and development of the American Paper and Pulp Mill Superintendents' Association since its inception in 1919, and this was indicated in their fifth annual convention held in the cities of Dayton and Middletown, Ohio, May 22, 23 and 24, 1924. The meeting was a record in progress over former conventions and was planned and carried out on the keynote of harmony and understanding in our industry.

An excellent program was arranged and nothing was overlooked on the part of the hosts to make the visit of the superintendents a time to remember forever after. The attendance numbered about three hundred, which included a number of visiting ladies. Entertainment for the latter was bountifully provided for, which included free airship rides, complimentary luncheons, automobile trips and a visit to the National Cash Register plant.

Following the registering on Thursday morning, May 22, at the Miami Hotel of Dayton, the meeting was called to order in the ball room by H. W. Server of the Miami Paper Company, chairman of the convention committee. He introduced President Nelson R. Davis, who read the following message:

The President's Message

A year ago, at Springfield, you elected me to the office of president, succeeding Mr. O'Connell, who had faithfully served us for two years. I picked up the work through a sense of duty rather than desire and I have done my best to carry it on in a way which would meet with your approval. I will refer briefly to our activities during the past year.

In such an organization it is important and necessary that working committees take over the burden of collecting and co-ordinating data of interest to all, since the individual working alone accomplishes little and becomes easily discouraged. Such committees have been functioning this past year and I congratulate each of them on the progress made. Those of you who have had experience in organizing committee work know how difficult it is and we appreciate the efforts of those who have co-operated with us in this work.

Your officers were authorized to organize a section to be known as the News Section of our Association. This has been done and Mr. Joseph H. Slater who has had charge of the year's program is responsible for its success. I hope it will be possible for the News Section to hold occasional get-togethers other than at our regular annual convention, in order that the organizations of our great news producing mills may become more intimately acquainted through the Superintendents' Association.

Your officers arranged early in the year for a committee of five from our Association to co-operate with similar committees from the Technical and Cost Associations in setting up standards applicable to the various divisions of the industry. From some of the reports I have seen I know that this committee's work with Mr. B. T. McBain as chairman will be of real value to us.

We have been interested to assist the committee from the paper section of the National Safety Council in the revision of the tentative safety code for all departments of pulp and paper mills. Committees of Superintendents were assigned to this work in several divisions, serving localities where the safety council were to hold meetings, to consider this code. These meetings have been very successful and I have letters from the Secretary of the National Safety Council thanking us for the help our Committees have been in this work. When the Safety Code is finally ready for adoption our Association will feel a great deal of satisfaction in knowing that our members were a contributing factor in its success.

Another committee that has done a great deal of work is the one appointed to co-operate with a committee from the Technical Association in the Study of the possible need of a standardized apprenticeship course for the industry. Thru its able chairman, Mr. J. S. Schumaker, the committee is making a detailed report with recommendations which deserve your careful study.

A committee headed by Mr. Ed. T. A. Coughlin has checked up the by-laws of this Association with the minute book and all resolutions made up to June, 1923. This work warrants your commendation.

I have been mindful of the fact that we can not stand still. We must either grow by adding new divisions to our organization of by reaching out to cover a larger territory thru existing divisions. Accordingly, in addition to the News Print Division already mentioned, we have formed a Southern Division at New Orleans comprising Superintendents from the Southern and Gulf states. This work requiring painstaking effort and patience has been very successfully carried on by by Ed. T. A. Coughlin, with the assistance of others.

As an organization it is important that we radiate progress and everything that is good, not only to our members but to the industry. I will not take your attention in discussing this here but will refer to it later in connection with the future of our organization.

I have felt very keenly this past year the importance of impressing on all Superintendents and Foremen, before whom I have had occasion to speak, their responsibility in developing men. I do not mean altogether the development of a man's ability to do this particular work, but also the development of that state of mind on the part of workmen which will enable them to recognize that if they work for their employer's interest they are working for their own interest. If you look around and see those manufacturers who are most successful in any industry, you will find they are the ones who have the

Picture taken of the representatives to the Fifth Annual Superintendents'

interested, contented employees such as most manufacturers had before the days when the spotlight began to be focused first on labor, then on capital.

We, as superintendents, can be the greatest factor in bringing about a change of attitude for the better on the part of our subordinates. Let us strive to be real men whom every workman will respect and not fear, men whom the workmen will make confidants, men whose calm and considerate treatment of subordinates under all circumstances will show able leadership. N. R. Davis.

The address of welcome was given by Mr. F. O. Eichleberger, city manager of Dayton, who extended it in a most cordial manner and figuratively presented the keys of the city to the president. Response was made by Mr. B. T. McBain, third vice-president.

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, was called upon by President Davis for remarks and he responded with a talk on "The Paper Import Situation" a copy of which is published on another page of this issue.

Howard S. Taylor, president of the Technical Association of the Paper and Pulp Industry was then introduced, who remarked that the closer the superintendents and technical men can get, the better it will be for the industry. He then read a paper "Steam and Power for Pulp and Paper Mills" which is published elsewhere in this issue.

The regular order of the program was then taken up, which was the presentation of a number of prepared papers. Harry P. Carruth read a paper on "Vocational Education" and followed this by reading another prepared by Francis S. Pope on the subject "Employment Problems."

The meeting adjourned at noon for a buffet luncheon at the Miami Country Club, sponsored by the Mead Companies. Souvenir knives were presented here by the Mead Companies and the A. A. Simonds-Dayton Company. Mr. Worrell, representing the Mead Companies, gave the welcome address which was responded to by John H. Slater, representing the associated Mead Companies, who remarked that Mr. Mead has always been in favor of associations and is a great supporter of the work which they are trying to do.

The afternon session was resumed in the ball room of the Miami Hotel and began with a very well prepared and interesting paper by C. L. Cecil of the Cornell Wood Products Company on "The Pulp and Paper Mill Superintendents Part in Forest Conservation." Mr. Cecil's paper is published elsewhere in this issue. His paper emphasized points which must be considered in figuring out a future supply of wood for the paper industry. Discussion followed this reading in which Dr. Baker told of the McNary and Clark Bills which are now before Congress to provide for a definite forestry policy in the forest land of this country. Dr. Baker suggested some action on the part of the Association in supporting these two bills and the matter was referred to the Resolutions Committe. A very interesting discussion ensued on the whole subject of reforestation and the matter of using all of the good valuable wood that comes through a mill at the present time. Dr. Baker also called attention to the amendment to the Constitution in the state of Wisconsin which will be voted upon in November, to make possible the practice of forestry in that state. Every superintendent of every mill in Wisconsin should inform the men in their mills as to this amendment and see that they vote for it.

A very excellent paper was then read by B. S. Summers on the subject of "Paper Making Fibres." It was a worthy paper but no discussion followed on account of the shortness of time.

Mr. M. C. Burrell of the Orr Felt & Blanket Company read an interesting paper on "Selection and Abuse of Felts." In the discussion which followed it was brought out in regard to the cleaning of felts that ordinarily it was better to rope a felt than to beat it but that it should no be done under any great pressure. However, because of varying conditions in the different mills, no set rule could be made. Mr. Bryant of the Bryant Paper Company brought up the question of why felts sometimes fill up in one small spot. This was laid to a number of causes, among which is a soft spot in the rubber roll. In answer to President Davis' question in reference to the compound for washing felts, pure soap was recommended. Mr. Tom Harvey mentioned the fact that some felts, when first put on, would couch properly while others would not. This was laid to the oil left in the felt by the manufacturer. "The Beater of Today" was the subject of the next paper by Charles Shartle, of the Shartle Brothers Machine Company.

Pageant and Wednesday Evening Banquet

At five o'clock the meeting adjourned to permit the members and visiting ladies to attend a patriotic pageant, presented by the children of the Patterson School. This was a most inspiring demonstration, put on with all the fervor that children can express. There were moist eyes and quick beating hearts in the breast of everyone who witnessed it.

A banquet and entertainment, sponsored by the Allied Industries of the Miami Valley took place at seven o'clock in the Miami Hotel. Vaudeville acts and a clever monologue by George Mann entertained us wonderfully. The toastmaster, Mr. Robert T. Houk, Jr., of the George H. Mead Co. made some brief remarks and then introduced Mr. Charles Shartle, who made everybody feel happy and jolly by his genuine hospitable manner and his witty remarks.

The next speaker on the program was Mr. Sherman Rogers, a lecturer and writer of renown. If those attending the convention got nothing more out of it than Mr. Roger's message, as President Davis said, the convention would be well worth while. Mr. Rogers complimented the Patterson School Pageant very highly in saying that he got more inspiration there in forty minutes that in the last five years.

He took a strong stand against the soldier's bonus, and believed that if the men understood that it must be paid for by the rank and file rather than the wealthy people, they would never have asked for the bonus. He complimented President Coolidge on his firm and courageous stand.

Mr. Robert's message, very vital to mill superintendents, was the plea for a better understanding between management and labor. As long as many classes of labor know of the work of boards of directors and chambers of commerce only as interpreted to them by labor agitators it is not surprising that there is trouble. When the management takes the trouble to go to the laboring man, teach him that his real aim

Convention, in front of the Miami Country Club, Dayton, Ohio, May 22, 1924

is not to cut his throat, but rather co-operation for the good of the industry, serious trouble has been avoided in every case. In every dispute, there are three viewpoints, those of the two parties and the right one. People are too prone to see the bad qualities in others rather than the good.

Mr. Rogers spoke from first hand knowledge as for many years he was a lumberjack in the northwest. He told of his experience in starting his present work, of his first article in one of the New York papers and his first speech which was before the New York Chamber of Commerce. Since that time, he has written many articles and given many speeches in different parts of the country, selling the idea of faith in men to employers.

Friday's Sessions

The second day's proceedings were opened by President Davis in the Miami Hotel at nine-thirty o'clock, in the morning. The first speaker on the program was Mr. John R. Roberts, of the Du Pont Company, Wilmington, Del., who spoke on the "Tinting of White Paper." A general discussion followed Mr. Robert's talk, in which Mr. Wm. T. Shenk, of the Black-Clawson Co., brought out that in his experience of mixing the color in liquid form, using two pounds to fifty gallons, he has used about a pint of acetic acid which holds it quite permanently, and in case it does go bad or concentrate, that barrels were fitted with a coil blowing air into them. The air keeps it constantly in agitation.

"Recording Devices Used in Pulp and Paper Making" was the subject of the next paper prepared and read by Mr. M. A. Goetz, of the General Electric Company, who devoted the most of his talk to the application of flow meters in paper making processes. A short discussion followed the reading of this paper, in which Mr. Harvey Brought out the point that in general the makers of instruments were not familiar with pulp and paper maker's problems and urged co-operation of the superintendents with the technical men on this work. President Davis appointed a committee with Mr. Harvey as chairman to work on this.

The past presidents were called upon for remarks and Mr. Fred Boyce expressed his pleasure and satisfaction in seeing the growth of the association, which started a few years ago with but a handful of men, and now, as he said, "look what we have." John H. O'Connell, past president, agreed with Mr. Boyce and warmly extended an invitation, on behalf of the Watertown, New York Delegation, to the Association to hold the next convention in that city.

Committee Reports

The report of the Standards Committee was then read by Chairman B. T. McBain, as follows:

"The report of the Committee of Fifteen on Standards, five in the Cost Association, five in the Technical Association and five in the Superintendents' Association, is one of progress. It is a big job and will take months yet to complete. The sulphite report, sulphate report and ground wood report are in. The Soda and Bleaching Committees have not finished up to date, although they have questionnaires out and they expect soon to have the information necessary.

"We recommend that the Committee be continued for another year and when the work is finished the report be printed in pamphlet form and distributed to the members of this Association, and we consider it is going to be a very valuable lot of information."

The report of the Apprenticeship Committee, prepared by Chairman J. S. Schumaker, was then read by Secretary Massey, as the chairman was unable to attend the meeting.

W. G. MacNaughton, secretary of TAPPI, spoke at length on this subject and urged upon the superintendents not to remove the subject of apprenticeship from the Association's agenda. The report of the committee was accepted and since that committee had functioned as far as it could go, it was discharged, and a new committee appointed consisting of R. W. Jenkins, Chairman; G. P. Hambrecht; Dr. C. A. Brautlecht; Fred Cranholdt; Joseph H. Slater; Alfred Bryant and R. H. Laftman. A general discussion on the subject of training boys to become paper makers took up considerable of the morning's session.

The report of the Resolutions Committee was next presented by Chairman B. T. McBain, as follows:

"RESOLVED, That the wonderful educational speech of Mr. Sherman Rogers at the Thursday night banquet be published separately as soon as possible and sent to all the members of this Association.

"RESOLVED, That all the individuals and firms who in any way have helped Joint Standards Committee of Fifteen of the Cost, Technical and Superintendents' Associations in their work up to date be and they are hereby given a vote of thanks, and that a copy of this resolution be forwarded to the official organ of this Association."

"RESOLVED, That the Miami Division of the Superintendents' Association, the Dayton Convention Committee and in particular Chairman Server, and through them all Ohio organizations who put their shoulders to the wheel be and they are hereby given unanimous vote of thanks of this Association, and each member thereof for this great convention as well as for the wonderful entertainment arranged and carried out by them, and that a copy of this resolution be sent to the Miami Division and to Mr. Server by the Secretary of this Association; also, that this resolution be printed in the official organ."

"RESOLVED, That the Federal Congress be and it is hereby requested and urged to give the McNary Clark Forestry Bills favorable attention before the adjournment of the present session, and that the Secretary not only put this resolution on the record but send copies thereof to all members of the present Congress."

"RESOLVED, Further, that this Association send a copy of this resolution to the members of this Association residing in the state of Wisconsin, requesting said members to inform their men of the Constitutional Amendment before the people of Wisconsin at the November, 1924, elections which must be passed before Wisconsin can practice forestry under the McNary Clark Bills."

"WHEREAS, We all witnessed a most wonderful Patriotic Pageant at the Patterson Public School of Dayton on Thursday, May 22; and,

"WHEREAS, Every one was impressed thereby beyond human expression; and,

"WHEREAS, Perfection was personified and it is the wish of all seeing it that the world shall know of this wonderful patriotic work; now, therefore, be it

"RESOLVED, That this Association go on record with a vote of thanks and appreciation, and a copy thereof be sent to the Patterson Public School of Dayton, also that publication thereof be made in the official organ of the Association."

"WHEREAS, The abnormal years 1914 to and including 1922 in the pulp and paper industry, both as to demand and price, are behind us; and,

"WHEREAS, The more normal conditions of pre-war years as affecting raw materials, labor, etc., may be before us; and,

"WHEREAS, Conditions generally are rather difficult because of the general uncertainty resulting from Presidential election year and the investigations at Washington, D. C.;

"RESOLVED, That what is needed in the pulp and paper industry today is greater efficiency in every department of all the mills and the lowering of costs generally as well as to increase the efficiency of our sales activities, and we urge greater co-operation in all departments of the industry in meeting these problems to the end that the mills are kept running as nearly as possible on full time, at lowest possible cost and employment given to the labor of the industry."

"RESOLVED, That this Association unanimously go on record, and that the Secretary send a copy of this resolution to each and every member of Congress and to the President of the United States as well as the Secretaries of the Cabinet, asking that means be taken immediately to investigate the illegal importing of pulp and paper through wrong classification and under valuation to the end that American labor and the pulp and paper industry generally be properly protected not only by tariff but by proper careful inspection and investigation into each shipment received."

"RESOLVED, That Secretary Hoover's letter of May 10, regarding coal be read to the membership at this meeting, published in our official organ and that all superintendents be asked to request their managers to follow out Mr. Hoover's suggestions in so far as they can; this letter to be made a part of this resolution."

This letter is the same as the one we received last year about ordering coal early so there will be no car shortage the latter part of the year.

"RESOLVED, That the unanimous vote of thanks of this Association be tendered to the firms who aided the Dayton Convention Committee in its work of entertainment, and that a copy of this resolution be sent to each one at their principal address; be it further

"RESOLVED, That this resolution be printed in the official organ of the Association."

Election of Officers

The report of the Nominating Committee proposed the following names for National Officers for the coming year:

President, Nelson R. Davis.

1st Vice-President, E. T. A. Coughlin.

2nd Vice-President, Homer Stafford.
3rd Vice-President, B. T. McBain.
4th Vice-President, H. W. Server.
5th Vice-President, R. H. Laftman.
Secretary, Robert Emminger.
Treasurer, P. J. Massey.
Motion was made and carried to cast one ballot for the names proposed. They were duly elected.

Trip to Middletown

Adjournment was made at noon on Friday and a trip made to Middletown by automobiles for luncheon at the Manchester Hotel in that city. Luncheon was sponsored by the Rice Coal Company of Dayton. President Davis again introduced Mr. Sherman Rogers, who spoke very highly of Middletown and the community spirit shown by the manufacturers and people there. The afternoon was devoted to sectional meetings as follows:

Sectional meetings as follows:
Newsprint Division at the Manchester Hotel.
Board Division at the Gardner-Harvey Paper Co.
Coarse Paper Division at the Manchester Hotel.
Book and Fine Writing Paper Division at The Sorg Paper Company.
Chemical Pulp Division, at the Manchester Hotel.

A number of the papers presented at the above meetings are published in the pages of this issue. Interesting visits were made to the mills in Middletown, including the new Frank Smith Paper Mill, which is a unit in the Sorg-Oglesby group. Every piece of machinery in this mill will be operated by electrical current and is expected to be in operation the latter part of the summer.

Following the meetings of the Board Division at the Gardner-Harvey Paper Company, those who attended the meeting were conducted through the mill by Mr. Tom Harvey, manager. A real treat was enjoyed in this visit as something new in the process of board manufacture was here shown. The paper stock is put into digesters and washed for about three hours with hot water under a low steam pressure. The stock is then screened thoroughly and comes from the pulp thickeners free absolutely from all foreign substance. The result is a longer life of the Jordan engines and a high grade stock.

Friday Evening Banquet

A trip was made by automobiles back to the Dayton Country Club where at seven o'clock a dinner and inspirational talks sponsored by the Miami Valley Paper Manufacturers' Association, was held. Orchestral music and singing by the Dutch Club of Dayton entertained the diners. Mr. Arthur H. Nevius, vice-president of the Miami Paper Company performed the office of toastmaster in a gracious manner and congratulated the Superintendents on the success of their Convention. Mr. Thurman (Dusty) Miller and Colonel M. G. Collins were then introduced and inspired everyone with their philosophy and wit.

Saturday's Visit to Mills

Parties were divided on Saturday morning for visits to the plants of the Mead Pulp and Paper Company and the Chillicothe Paper Company, at Chillicothe, O., the Orr Felt and Blanket Company plant at Piqua and the National Cash Register plant in Dayton.

Exhibits

Among the many manufacturers present at the convention, the following had exhibits in the rooms of the Miami Hotel:

Fulton Engineering Company, Middletown, Ohio. A miniature installation of the Fulton Forced Vapor Circulating System. This exhibit was an ingenious arrangement of bottles, a pump, etc., that clearly showed the operation of their system. Souvenir cigarette cases were given to visitors.

B. F. Goodrich Rubber Company, Akron, Ohio. Cutless Rubber Bearings, Roll Coverings and Transmission Rubber Belting.

Valley Iron Works, Appleton, Wis. Exhibit of their Voith Stock Inlet.

Among Those Present

C. K. Andrews, Itasca Paper Co., Grand Rapids, Minn.
F. O. Alton, Hamilton Service Co., Hamilton, O.
M. J. Argy, Cliff Paper Co., Niagara Falls, N. Y.
William J. Argy, St. Regis Paper Co., Black River, N. Y.
A. J. Allison, A. A. Simonds, Dayton, Ohio.
H. K. Anderson, Dayton Globe Iron Works, Dayton, Ohio.
C. F. Buss, Provincial Paper Mills, Toronto, Ont.
B. M. Bishop, Gardner, Harvey Paper Co., Middletown, O.
A. W. Bronk, Deerfield Valley Paper Co., Monroe Bridge, Mass.
F. A. Brown, G. H. Mead Co., Dayton, Ohio.
E. M. Baker, J. Cherry Co., Tama, Iowa.
J. L. Bedwell, Warren Mfg. Co., Riegelsville, N. J.
W. H. Burns, Valley Iron Works, Appleton, Wis.
William Bottles, Franklin Board and Paper Co., Franklin, O.
Henry Bert, Monroe Paper Products Co., Monroe, Mich.
William Brydges, Defiance Paper Co., Niagara Falls, N. Y.
W. E. Beadle, Consolidated Pulp & Water Power Co., Wisconsin Rapids, Wis.
J. A. Bowers, Hammermill Paper Co., Erie, Pa.
Barney Benson, Williams Grey Co., Elkhart, Md.
D. D. Briggs, United Paperboard Co., Urbana, Ohio.
Bert M. Briggs, United Paperboard Co., Urbana, Ohio.
L. H. Breyfogle, Draper Brothers Co., Canton, Mass.
Hugh P. Baker, American Paper and Pulp Association.
A. E. Broughton.
John Bingham, Dill & Collins Co., Philadelphia, Pa.
Harold Bing, Sandusky Foundry, Sandusky, O.
Alfred Bryant, Bryant Paper Co., Kalamazoo, Mich.
H. Bennett, Valley Iron Works, New York.
Frank Boggs, Schuler & Benninghofen, Hamilton, O.
M. V. Brooks, Miamisburg Paper Co., Miamisburg, O.
A. F. Be tham, Chicago Mill & Lumber Co., Cincinnati, O.
R. W. Bowen, Cincinnati Rubber Manufacturing Co., Cincinnati, O.
A. H. Barlow, Hager Strawboard and Paper Co., Cedarsville, O.
F. L. Barstow, Falulah Paper Co., Fitchburg, Mass.
J. E. Beatty, Seaman Paper Co., Chicago, Ill.
A. E. Bridge, Shartle Brothers, Middletown, O.
H. C. Colson, Peerless Paper Co., Dayton, O.
F. E. Caton, Canadian Paper Board Co., Montreal, Canada.
C. C. Conner, U. S. Asbestos Co., Manheim, Pa.
W. M. Cary, E-Z Opener Bag Co., Braithwaite, La.
J. S. Clemons, Hummel & Downing Co., Milwaukee, Wis.
W. F. Cornell, Buckeye Soda Product Co., Cincinnati, O.
W. M. Cramer, Chicago Mill and Lumber Co., Cincinnati, O.
W. W. Cronkhite, General Electric Co., Schenectady, N. Y.
F. J. Carroll, Simonds Saw & Steel Co., Chicago, Ill.
M. J. Cornell, St. Regis Paper Co., Herring, N. Y.
John Colden, Wrenn Paper Co., Middletown, O.
J. R. Carter, J. G. Cherry Co., Tama, Iowa.
C. E. Cole, Cincinnati Paper Board, Cincinnati, O.
G. H. Chidester, The Paper Industry, Chicago, Ill.
John Cornell, The Paper Mill, New York City.
O. T. Chalon, Kutroff, Pickhardt Co.
E. T. Coughlin, Franklin Coated Paper Co., Franklin, O.
J. C. Death, Franklin, O.
P. F. Denner, Kalamazoo Paper Co., Kalamazoo, Mich.
Nelson R. Davis, S. D. Warren Co., Cumberland Mill, Me.
Joseph H. Dorr, Eastwood Wire Mfg. Co., Belleville, N. J.
H. E. Dieckmann, Chas. N. Stevens Co., Chicago, Ill.
David Dillon, Middletown, O.
A. Scott Dowd, The Paper Industry, Chicago.
F. W. Drake, Orr Felt & Blanket Co., Piqua, O.
H. E. Dennie, Security Rubber & Belting Co., Chicago, Ill.
Edw. F. Driscoll, Smith Paper Co., Lenoxdale, Mass.
J. E. Daley, Port Huron Sulphite Pulp and Paper Co., Port Huron, Mich.
E. E. East, Michigan Paper Co., Plainville, Mich.
R. F. Engelhardt, American Paper Products, Carthage, Ind.
Jacob Edge, Downingtown Mfg. Co., E. Downingtown, Pa.
H. E. Eurich, Macsimbar Paper Co., Otsego, Mich.
W. F. Ebling, Ohio Knife Co., Cincinnati, O.
H. E. Erckman, Sandusky Foundry and Machine Co., Sandusky, O.
F. L. Flanders, Dilts Mach. Works, Fulton, N. Y.
H. W. French, Hammermill Paper Co., Erie, Pa.
F. E. Field, Hinsdale Paper Mfg. Co., Hinsdale, N. H.
F. D. Frampton, Hopper Paper Co.
A. C. Ford, A. A. Simonds, Dayton, O.
Harvey D. Frost, W. S. Tyler Wire Co., Cleveland, O.
H. G. Funsett, Hagar Straw Board and Paper Co., Cedarville, O.
C. E. Fry, Lincoln Paper Co., Elkhart, Ind.
Smith Fry, Lincoln Paper Co., Elkhart, Ind.
Arthur B. Green, Nashua Gummed and Coated Paper Co., Middletown, O.
William D. Fulton, Fulton Engineering Co., Middletown, O.
M. A. Goetz, General Electric Co., Schenectady, N. Y.
W. G. Kilkey, Michigan Paper Co., Plainville, Mich.
John S. Gulledge, the B. F. Goodrich Rubber Co., Akron, O.
E. H. Gilman, Bryant Paper Co., Kalamazoo, Mich.
Frank S. Gardner, A. A. Simonds, Dayton, O.

E. W. Gibbons, Smith Paper Co., Lee, Mass.
Robert M. Guie, Philadelphia Felt Co., Philadelphia, Pa.
J. A. Helin, Stebbins Engineering & Mfg. Co., Watertown, N. Y.
Tom Harvey, Gardner Harvey Co., Middletown, O.
W. J. Hobbs, Adams Bag Co., Chagrin Falls, O.
C. L. Harten, Rex Paper Co., Kalamazoo, Mich.
A. M. Hinkson, Peerless Paper Co., Dayton, O.
Ed. H. Hall, Fitchburg Screen Plate Co., Fitchburg, Mass.
John H. Hollingsworth, Oswego Falls Corp., Fulton, N. Y.
W. C. Hurley, H. Waterbury & Sons, Oriskany, N. Y.
V. Hottelling, Watervliet Paper Co., Watervliet, Mich.
T. P. Hannon, U. S. Rubber Co., Columbus, O.
J. A. Jack, Philip Corey Mfg. Co., Lockland, O.
C. H. R. Johnson, Beckett Paper Co., Hamilton, O.
R. S. Johnson, Pusey & Jones Co., Wilmington, Del.
C. E. Joyce, Manhattan Rubber Mfg. Co., Passaic, N. J.
F. Kronhold, Kimberly-Clark Co., Neenah, Wis.
C. H. Kent, Paper Makers' Chemical Co., Holyoke, Mass.
J. W. Kastetter, Ft. Wayne Corrugated Paper Co., Ft. Wayne, Ind.
R. H. Kelly, Marathon Paper Mills, Rothschild, Wis.
C. A. Kelly, Champion Coated Paper Co., Hamilton, O.
R. E. Krudener, Lagerloef Trading Co., New York City.
Thomas Keogh.
L. F. Knickerbocker, Provincial Paper Co., Port Arthur, Ont.
C. E. Kinney, Hercules Powder Co., Wilmington, Del.
David M. Kelly, Bloomer Brothers, Newark, N. J.
Edward Kormin, Heller & Merz Co., Chicago, Ill.
W. A. Kelly, Northern Paper Mill, Green Bay, Wis.
John Kehm, E. P. Lawson, New York City.
W. J. Livingston, Dexter Sulphite & Paper Co., Dexter, N. Y.
Joe Loughead, Paper Mills Supply, Kalamazoo, Mich.
Benjamin T. Larrabee, S. D. Warren & Co., Cumberland Mills, Me.
F. H. Lueders, The Seybold Machine Co., Dayton, O.
Herbert Lippitt, International Paper Co., New York City.
H. H. Latimer, Beckett Paper Co., Hamilton, O.
Charles Ludwig, Mead Pulp & Paper Co., Chillicothe, O.
W. T. Libbey, Brown Co., Berlin, N. H.
E. R. MacLaren, Albany Felt Co., Albany, N. Y.
C. G. McClellan, Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
H. G. McDowell, Pusey & Jones Co., Wilmington, Del.
W. F. McClellan, Windsor Locks, Conn.
B. T. McBain, Nekoosa-Edwards Paper Co., Miami, O.
W. G. MacNaughton, Technical Association, New York City.
William MacGregor, Bemis Brothers Bag Co., Peoria, Ill.
D. H. Montville, Shartle Brothers Machine Co., Northhampton, Mass.
Edwin McWhirter, Provincial Paper Co., Georgetown, Ont., Canada.
L. T. Murphy, Auglaize Box Board Co., St. Marys, O.
J. S. Matthai, Heller & Merz Co., Chicago, Ill.
Thomas F. Martin, Hammersley Mfg. C., Garfield, N. J.
Frank S. Murphy.
Charles N. Mooney, Smith Paper Co., Lee, Mass.
F. J. Mooney, Smith Paper Co., Lee, Mass.
Edwin E. Martin, Bagley & Sewall Co., Watertown, N. Y.
A. D. Merrill, Stebbins Engineering Co., Watertown, N. Y.
P. J. Maasbyll, S. D. Warren Co., Cumberland Mills, Me.
John J. Meyer, Menasha Printing & Carton Co., Menasha, Wisconsin.
Claude Nicely, La Salle Paper Co., South Bend, Ind.
Elbert Milham, Bryant Paper Co., Kalamazoo, Mich.
E. H. Neblett, Standard Paper Co., Richmond, Va.
James J. O'Connor, Mead Pulp & Paper Co., Chillicothe, O.
J. H. O'Connell, Diana Paper Co., Harrisville, N. Y.
R. W. Pryor, R. B. Wolf Co., N. Y. C.
Frank Peterson, Ajax Paper Co., Buck, Pa.
W. E. Packard, Hammermill Paper Co., Erie, Pa.
J. Parent, Western Board & Paper Co., Kalamazoo, Mich.
L. D. Post, The Paper Mill, N. Y. C.
Max Poyck, Heller & Merz, N. Y. C.
Theo. M. Pomeroy, Z. & W. Crane, Dalton, Mass.
George H. Pountain, Allied Paper Mills, Kalamazoo, Mich.
W. L. Potts, Midwest Box Co., Cincinnati, O.
James G. Ramsey, Dill and Collins Co., Philadelphia, Pa.
L. E. Randecker, Hammermill Paper Co., Erie, Pa.
M. Redmond, Kalamazoo Paper Co., Kalamazoo, Mich.
William Rittig, Gardner Harvey Paper Co., Middletown, O.
J. L. Richardson, E-Z Opener Bag Co., Braithwaite, La.
J. A. Ritz, Ohio Paper Co., Miamisburg, O.
F. Ritz, National Vulcanized Fibre Co., Newark, O.
J. R. Roberts, E. I. du Pont Co., Wilmington, Del.
Ernest B. Robert, Bemis Bag Co., Peoria, Ill.
William J. Robertson, Heller & Merz, N. Y. C.
George Robertson, Beaverwood Fibre Co., Thorold, O. Canada.
H. E. Rockwood, Champion Paper Co., Carthage, N. Y.
Fred J. Rooney, Upson Co., Lockport, N. Y.
Geo. Roschik, Eagle Paper Co., Joliet, Ill.
C. E. Raney, Midwest Box Co., Cincinnati, O.
C. J. Salisbury, Bird Machine Co., South Walpole, Mass.
T. H. Savery, Jr., Bird Machine Co., Chicago, Ill.
James Salter, Victoria Paper Mills Co., Fulton, N. Y.
A. X. Schwable, Gardner Harvey Paper Co., Middletown, O.
William T. Shank, Black & Clawson Co., Hamilton, O.
Chas. W. Shartle, Shartle Bros. Machine Co., Middletown, Ohio.
Fred Shede, Watervliet Paper Co., Watervliet, Mich.
C. B. Smith, Dyes Distributing Co., Chicago, Ill.
W. H. Sievert, Michigan Carton Co., Battle Creek, Mich.
J. H. Slater, Escanaba Paper Co., Escanaba, Mich.
A. O. Spierling, Hammermill Paper Co., Erie, Pa.
Ward M. Smith, Philadelphia Paper Manufacturing Co., Philadelphia, Pa.
Jack Smith, Sr., Gardner Harvey Paper Co., Middletown, O.
L. E. Smith, Nekoosa Edwards Co., Port Edwards, Wis .
H. E. Stafford, Knowlton Brothers Co., Watertown, N. Y.
B. S. Summers, Technical Association, Port Huron, Mich.
William Sutherland, Penn Fibre Corp., York, Pa.
A. F. Smith, General Electric Co., Cincinnati, O.
G. H. Spencer, S. K. Industries, New York City.
Howard Stoursel, W. C. Parchment Co., West Carrollton, Ohio.
William H. Theroux, Sandusky Foundry & Machine Co., Sandusky, O.
C. O. Thorne, Watervliet Paper Co., Watervliet, Mich.
F. J. Temmermon, Northern Paper Mills, Green Bay, Wis.
J. A. Turner, Du Pont Co., Chicago, Ill.
Howard E. Teter, Mead Pulp & Paper Co., Chillicothe, O.
H. S. Taylor, Dayton, O.
R. H. Underdown, Heller & Merz Co., New York City.
Abe Vanderberg, Lincoln Paper Mills, Elkhart, Ind.
Robert W. Van Kerk, Jr., Du Pont Co., Chicago, Ill.
Washburn Weston, American Wringer Co., Woonsocket, R. I.
C. W. Werstler, Thomas Phillips Co., Akron, O.
William B. West, E. B. Jones & Sons Co., Pittsfield, Mass.
R. H. Whitney, B. F. Goodrich Co., Akron, O.
F. A. Whittiger, Kutroff Dick, Chicago.
A. G. Wightman, Hawthorne Paper Co., Kalamazoo, Mich.
C. A. Wiley, Nekoosa-Edwards Paper Co., Port Edwards, Wisconsin.
Lee L. Wilson, Morris Paper Mills, Morris, Ill.
C. W. Wright, Adams Bag Co., Chagrin Falls, Ohio.
A. F. Wilcox, U. S. Rubber Co., Chicago, Ill.
J. F. Yordy, Howard Paper Co., Urbana, Ohio.
C. M. Young, Cincinnati Rubber Manufacturing Co., Cincinnati, O.
O. Yates, Diamond State Fibre Co., Bridgeport, Pa.
E. F. Yohnke, Standard Paper Co., Kalamazoo, Mich.
Paul Zilske, Detroit Sulphite Pulp and Paper Co., Detroit, Mich.

A Talk on the Paper Import Situation*

By DR. HUGH P. BAKER
Secretary, American Paper & Pulp Assn.

YOUR President has suggested that possibly the one thing I can add in talking to you is to refer to briefly or describe briefly the import paper situation. You have seen a great deal of this import pulp and paper problem discussed in the trade press. It is a serious situation. It goes back to the big general problem of world trade, and it goes back still further to the inherent attitude of men—call it selfishness if you choose—in buying where they can buy cheapest.

Our industry is not suffering any more seriously from foreign importation than some of the other large industries of the country. We, of course, are apt to react quickest when our toes are stepped on in a matter of this kind. If imported paper is coming in from abroad in such a way as to injure our market, or if pulp is coming in in such a way as to close down our pulp mills, we feel it very quickly indeed.

We forget when we go into the department store to an advertised sale or into a five and ten cent store that we may be buying and helping this movement of foreign made goods,

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because our five and ten cent stores and our department stores and a good many other stores are filled pretty well with foreign made goods. You are just as anxious as any other citizen when you go into those stores to buy as cheaply as you can, and you are influenced by the advertisement to go where you can save a few cents possibly upon the thing you are proceeding to buy. I do the same thing.

In this matter of pulp and paper, we must distinguish very carefully between the pulp and paper that comes in free under our tariff and the paper that comes in classified wrong and undervalued. As you know, pulp and newsprint paper are on the free list. We put up no walls at all in the way of tariff against pulp, in fact we invite the foreign pulp manufacturer to come in and sell his pulp here in our markets, even though we suffer from it. Our bars are down as far as newsprint paper is concerned.

When we are discussing this question of more importations we must eliminate the articles that come in under the free list. Frankly, I think we could do a good deal in preventing some of the abuses that have arisen in the selling of foreign pulp in our markets, but that is another story and it might take more time than you want me to give to this particular subject.

Then there is one more thing we must do in distinguishing the difficulties which are arising in this foreign paper situation. We hear stories, and I have been getting them almost every day, and our trade press has been handling this thing effectively and sometimes they have repeated these stories in a way to give the impression that a tremendous amount of foreign paper is coming into this country and is injuring our whole market. Now, I say we must differentiate, we must distinguish very clearly the papers that are brought here and legally entered—that is, brought in and legally classified and the duty legally paid—from the papers that are brought in here and wrongly classified and undervalued. We can do nothing in the case of free pulp and paper; we can do nothing against those papers that are brought in here rightly classified and rightly entered.

It is my opinion from following this matter for a year or two, and following it very closely, that the large proportion of the paper that is brought in and upon which a tariff is paid is rightfully entered, legally entered, and we have nothing that we can do against that kind of paper except to be more effective ourselves and meet that paper in a fair and square way in the open market. So that limits us to the amount of paper that is brought in here wrongly classified and undervalued, and in the minute or two which I want to take from your program I want to discuss that kind of a situation, that kind of paper.

Wrongly Classified Paper Imports Apparently Small

There is no question but what a good deal of the paper has been brought in here and wrongly classified and undervalued. It is exceedingly difficult to find out how much paper is being brought in wrongly classified and undervalued, exceedingly difficult to distinguish that paper from the paper that is brought in legally. Therefore, it is very difficult for us, for the American Pulp and Paper Association, or for any other association, to answer effectively this charge that a vast amount of paper is being brought in. So far as we have been able to ascertain in the last year, the total amount of paper brought in wrongly classified and undervalued is not large in tonnage as compared to what we are producing ourselves. The tonnage, in fact, so far as we are able to ascertain, is small.

I say it is very difficult indeed to find out exactly what the tonnage is. The difficulty that has come in most cases from this paper that is brought in in this way, wrongly classified and undervalued, is a psychological difficulty. There may be a few cases or a few tons of paper brought in here and entered as wrapping or as print and sold for something else. Yet the fact that that small amount of paper is offered at a price below which we can afford to manufacture it in our own mill, and that that same paper may be offered in a number of different markets, pyramids these orders to the point where we think there is a great deal of paper and our market is actually affected, psychologically, rather seriously, by a comparatively small amount of paper.

Now, I have stated the problem to you briefly. We can do nothing with the pulp and paper that is on the free list. I have had some of the executives jump on me with four feet on the matter of the pulp coming in and being sold at absurdly low prices. You know as well as I know with the very difficult political situation at Washington that we are not going to get our present tariff law changed unless there is a change in the administration next November, and then it will come slowly.

We have nothing to say in a way about the paper that is brought in rightly classified and rightly valued, and the problem is with this comparatively small amount of paper that is wrongly classified and undervalued.

Now, I have stated the problem to you. What have we been doing about it? What has the industry been doing to meet this situation? About a year and a half ago I went before two of our affiliated associations, two of our largest affiliated associations, the Wrapping Paper Manufacturers' Service Bureau and the Writing Paper Association, stating this problem as I saw it, that we were being injured by this paper being brought in from abroad and sold at prices below what we could afford to manufacture it for. Action was taken in one of those associations, urging us to go ahead and establish contacts with consular offices, to keep in touch with the Tariff Commission and the Bureau of Foreign and Domestic Commerce in Washington to see what we could do in working with the treasury officials, the customs officials, in preventing wrong classification and undervaluation. In presenting that matter to these associations, I outlined a rough sort of a plan, that we would have to have men understanding the importation of paper to watch our ports of entry.

I said in those talks which I gave to those two meetings that I believed the great paper industry of the United States was so intimately tied up with world industry, with the world paper industry that it would be much to our profit if we could maintain a man in Europe, not to notify us of every shipment of paper from Europe (that would be a very difficult thing, because our officials abroad can't divulge the name of the man or the firm to which a shipment is made in this country), but rather to keep us in touch with the general industry on the other side—that is, our industry, pulp and paper—keep us informed as to the cost of raw materials and labor, available wood supplies, and all of the elements entering into the cost of manufacturing paper. It would take money, of course, for our industry to keep a man in Europe and to have one of our men watching our ports of entry in this country.

Finally, the situation became so difficult along about the first of the year that we disbanded, or we set aside one phase of our work in the American Paper and Pulp Association, that is our information service, and put Mr. Bullock, who was in charge of the work entirely, in charge of the import situation. Mr. Bullock went out and called on the consular officers in Boston, Philadelphia, Baltimore, and kept in close touch with the men in New York and as an old newspaper man he got a great deal of information which possibly I couldn't have gotten because I am not a newspaper man. He ran up against a good many cases of uncertainty as to classifications. Fortunately, Mr. MacNaughton, secretary of the Technical Association, is in our offices and has given us a very great deal of help in determining these papers so we could go back to the customs officials and help them to get what they should.

We found the most cordial reception everywhere we have gone with these customs officials. It is their business to enforce the law and if they can be rightly informed, if they can know of the right classification and make the right assessment of tariff, of course, they are going to get more money out of this incoming paper.

Effective Plan Being Worked Out

You know of the aggressive activity of the Salesmen's Association. They took hold of this several months ago and in the trade press, and in other ways emphasized to the industry the importance of this matter, and finally developed what was called the Wise plan, a plan outlined roughly by Mr. Henry Wise, of New York, an attorney who is attorney for the American Paper and Pulp Association and several other associations in the industry. At the time of our meeting in April, this Wise plan was discussed in the Salesmen's Association and a resolution was brought before the American Paper and Pulp Association, not advising the Wise plan but asking us as the central organization of the industry to formulate a plan (as this is a matter for the executives to work out in a way), an effective plan, and see that that plan could be adequately financed.

We now have a very effective committee at work on the plan. Mr. Frank Sensenbrunner is chairman of the committee, and Mr. Stokes is working with him, also a number of other prominent executives. We are hoping to bring into existence a more effective organization than we have at the present time to meet this situation. Such an organization is going to cost the industry some money. It is going to be necessary to put a number of thousands of dollars in it, having a man in Europe, if that seems desirable, or having experts watching our ports of entry.

The situation is a difficult one. Yet men possibly are not as close to it as the salesmen, but you are affected just the same because your interests are the interests of the executive, and you can be very helpful to the executive, not only along lines

of manufacture but along all lines affecting the paper industry in any way.

I am glad that you are going to consider this question. The more it can be considered the more facts can be known, and the more we can impress upon the industry the necessity of getting after this whole activity aggressively the better it will be for us. But I want to emphasize that it is a difficult problem; it is not easily approached. There are many factors in it which seem almost insurmountable as we have been working upon it the last six months. There are all sorts of things tied up with it, including politics, so far as our trying to get anything out of Washington is concerned to help us in this matter.

As I said in the beginning, it comes back to certain fundamental factors in our life, and it comes back to the question of selfishness among men. I was approached in Chicago a day or two ago by a man very much disturbed over the fact that you men are using foreign made wire. He felt that we should all get together and agree to use American made products. That may come up here. I know less of that than I do of the foreign paper situation.

There are certain underlying factors that are very important to consider and we must consider them fairly and carefully, and I want to assure you for the American Paper and Pulp Association that we are meeting this situation as aggressively as it can be met at the present time and we are going to meet it more aggressively and we want your help in meeting it.

Cost Convention Big Success

Hammermill Paper Company Host to Delegates

THE cost convention held at the Lawrence Hotel, Erie, Pa., on May 19, 20 and 21, proved to be one of the most successful yet held by this association. The speakers and subjects were good, the discussions lively, and the hospitality extended by the Hammermill Paper Company was of the best, including a luncheon to all the delegates on Tuesday, following which, automobiles were provided and everybody was taken to the Hammermill Paper Mill which was practically given over to them for the rest of the day. Every department was visited, and the department heads explained to groups of the delegates just how things were being handled, so that when the visit was concluded each man there felt that the Hammermill organization to a man had thoroughly lived up to their well-known reputation for hospitality.

Delegates were particularly interested in the laboratory and testing departments, where such excellent control is exercised over the Hammermill products; this was the outstanding feature, namely, the complete control of the manufacturing processes. Owing to the peculiar nature of the manufacturing processes necessary in the making of paper, such control is difficult to maintain, but it was made evident that the Hammermill organization have thoroughly realized the necessity for such control, and are maintaining it at all points.

Finally delegates were taken into the company's office and shown the different cost forms and records being used, and pamphlets were distributed on such subjects as, "Running a Factory to Make Money," "Getting Things Done in an Office," "Quicker Turn-Over for Your Goods," "Standardizing the Paper Used in Your Accounting Department." These distributions were made in the office of the Assistant Treasurer, William F. Bromley, who throughout the convention acted as host for the Hammermill Paper Company. The following verse was noticed on the wall of his office, which, since it signifies so well the proper spirit, is quoted here:

Don't drop your chin,
Look up and grin,
There's a lot of fellows like you
Whom fate can down with a single frown,
Who shrink from a knock or two,
Brace up and smile and all the while
Be determined not to run
But stick and fight each day and night,
Though a bare toe-hold be won,
Just stick out your chin and acquire a grin,
Don't whine whatever you do,
Each good hard knock means a block of stock
In the Bank of Success for you.

Address of Welcome

This was given by Mr. William F. Bromley, who stated that the Hammermill Company was very glad to have the opportunity of welcoming the members of the Cost Association to Erie, and that he regretted exceedingly it had not been possible either for President Behrend or Vice-President Norman Wilson to be in Erie, owing to previous engagements.

He stated that the Hammermill Company thoroughly believe in the work the association is doing, and that every pulp and paper mill in the country ought to be a member of the association, unless it already belonged to another association which was doing similar work. He emphasized the necessity that every executive in the industry is under at this time to make a careful study of the methods being used in compiling his costs, and pointed out that there never was a time when the necessity for doing this was greater.

He was followed by President James A. Reilly, who spoke on "Accurate Accounting, and What It Means to the Pulp and Paper Industry." During this address Mr. Reilly gave certain concrete cases which had come under his notice just recently, of how a properly run cost system could be used to effect large savings in a mill.

Secretary Thomas J. Burke reported that the association was in a better financial condition than it had been since November, 1920, when he became secretary-treasurer. At that time it had been necessary to borrow money at the bank, whereas now the association was practically out of debt, and had increased its membership during the past year. He announced that Mr. W. D. Bryson, assistant treasurer of the Philadelphia Paper Mfg. Company, had announced that his company had decided to join, handing him a check for dues to December 31, 1924.

Specially prepared pamphlets were given out by Mr. L. H. Olson, of the American Appraisal Company, as well as by Fred S. Smith, president of the Smith Insurance Service, Inc.

Particular interest was evinced in the address given by Mr. Alexander Wall, secretary of the Robert Morris Associated. This was the third time Mr. Wall had addressed the Cost Association, and he exhibited a chart showing how "Ratios" could be developed by the pulp and paper industry which would be extremely useful to the executives of that industry. Copies of this chart are now being made and will be distributed to members of the association as well as those representatives of non-member mills who attended the convention.

Another outstanding address was that given by Ex-President Seth L. Bush, on "Labor Losses, How They Can Be Cut." Mr. Bush stated that as a result of his experience he felt that all work done in studying and improving employment conditions was not only good from a moral, but also from a financial standpoint. He cited many instances to prove the necessity for such work, and advised all cost men to seriously study this phase of their work.

Banquet

President Nelson R. Davis of the American Pulp and Paper Mill Superintendents' Association spoke on "The Value of Cost Statistics to Superintendents." Mr. Davis' talk was well received.

The chief speaker of the evening was Mr. Joseph Albrecht, tax counsel for the Hammermill Paper Company, who gave a most instructive and interesting address on tax matters. Mr. Albrecht related some of the very interesting experiences he has had in prosecuting claims for various clients, and advised all accountants present, not only themselves, to carefully examine all payments made on account of income and excess profits taxes for past years but also to advise their friends to do so. He stated that there was not the slightest possible doubt that large over-payments of taxes had been made by a number of concerns who were not aware of these "overages." In this connection he pointed out how necessary it was to get expert advice in view of the many different rulings and regulations as well as tax decisions being made constantly, some of which might have a direct bearing on a

case previously decided and thus make it possible for the tax payer in that case also to get a refund.

Mr. Albrecht showed by his talk that he was thoroughly well acquainted with the conditions existing in the Tax Bureau, and his address will be reported in full later in this section.

An interesting subject, "The Kind of Cost Figures the President Wants," was that assigned to Mr. Hugo Diemer of the La Salle Extension University.

Mr. H. F. Farrington, C. P. A., spoke on "Purchase Discounts." This subject provoked a very lively discussion, and a number of delegates expressed their opinion as to how such discounts should be handled. The speaker stated that in his opinion discounts on purchases chargeable against current assets should be included in the purchase price, whereas discounts on purchases for fixed assets should be excluded from the purchase price.

Next Convention

At the general meeting a resolution was passed that the association's next convention will be held in New York City on December 8, 9 and 10 and that a special effort be made to attract executives to the sessions in view of the increasing importance of proper cost work in the industry.

A vote of thanks was also passed to the speakers and the secretary-treasurer was instructed to write President Behrend of the Hammermill Paper Company, thanking them for their very kind and generous hospitality to everybody present.

A vote of thanks was also passed to Mr. William F. Bromley and his associates who had contributed so much to the success of the convention.

Following is a list of members who attended the convention: W. D. Bryson, of the Philadelphia Paper Manufacturing Co., Manayunk, Pa.; E. E. Grant, of the Crystal Tissue Paper Company, Middletown, Ohio; G. D. Porter, of the Strathmore Paper Company Mittinoague, Mass.; W. E. Daverin, of the Strathmore Paper Company, Mittinoague, Mass.; W. W. Howe, of Crane & Company, Dalton, Mass.; C. J. Kittredge, of Crane & Company, Dalton, Mass.; J. E. Whitman of the S. D. Warren Company Cumberland Mills, Me.; R. B. Hersey, of the Hollingsworth & Vese, Boston, Mass.; C. V. Sidell, of Boston, Mass.; R. B. Knott, of the Eastern Manufacturing Company, Bangor, Me.; L. H. Olson, of the American Appraisal Co. (speaker), New York City, N. Y.; W. F. Bromley, of the Hammermill Paper Company, Erie, Pa.; E. A. Austin, of the Hammermill Paper Company, Erie, Pa.; G. W. Carr, of the Hammermill Paper Company, Erie, Pa.; S. Byron, of the Hammermill Paper Company, Erie, Pa.; C. Southgate, of the Beaver Paper Products Co., Inc., Buffalo, N. Y.; B. E. Vosteen, of the Beaver Paper Products Co., Inc., Buffalo, N. Y.; H. M. Skinner, of the Harmon Paper Co., Brownville, N. Y.; P. F. Dolan, of the Lincoln Paper Mills, Merritton, Ont., Canada; G. E. Madden, of the Mead Pulp & Paper Co., Chillicothe, Ohio; W. C. Ludwig, of the Mead Pulp & Paper Co., Chillicothe, Ohio; S. A. Hummer, of the York Haven Paper Co., York Haven, Pa.; J. H. Kline, of the York Haven Paper Co., York Haven, Pa.; A. W. Astley, of the Chemical Paper Mfg. Co., Holyoke, Mass.; W. R. Davis, Scott Paper Co., Chester, Pa.; G. K. Ferguson, of the Watervliet Paper Co., Watervliet, Mich.; C. L. Brown, of the Michigan Paper Co., Plainwell, Mich.; John Reiser, of the Antietam Paper Co., Hagerstown, Md.; H. J. Kendall, of the Paterson Parchment Paper Co., Passaic, N. J.; J. A. Reilly, of the American Writing Paper Co., Holyoke, Mass.; K. F. Wenz, of the Champion Fibre Co., Canton, N. C.; E. C. Hilfert, of the Riverside Paper Company, Appleton, Wis.; H. A. Castle, of the Racquette River Paper Co., Potsdam, N. Y.; P. A. Schilling, of the Waldorf Paper Products Co., St. Paul, Minn.; Seth L. Bush, of the Cracker McElwain Co., Holyoke, Mass.; E. R. Grinnell, of the Parker Young Co., Boston, Mass.; A. H. King, of the Chemical Paper Mfg. Co., Holyoke, Mass.; A. W. Field, of the Lincoln Paper Mills, Lockhart, Ind.; C. Bare, of the Lincoln Paper Mills, Lockhart, Ind.; R. T. Boutillier, of Knowlton Brothers, Inc., Watertown, N. Y.; H. C. Bradford, of the Rex Paper Co., Kalamazoo, Mich.; C. H. Cashmore, of the Paterson Parchment Paper Co., Passaic, N. J.; Hugo Diemer, of the La Salle Extension University, Chicago, Ill.; C. A. Filer, of the Cornell Wood Products Co., Chicago, Ill.; H. H. Griswold, of C. H. Dexter & Sons, Inc., Windsor Locks, Conn.; J. H. Karges, of C. H. Dexter & Sons, Inc., Windsor, Conn.; J. C. McCormick, of Knowlton Bros., Inc., Watertown, N. Y.; A. W. Miller, of the Cornell Wood Products Co., Chicago, Ill.; F. S. Smith, president of Smith Insurance Service, Inc., Boston, Mass.; Alexander Wall, of Robert Morris Associates, Lansdowne, Pa.; J. Albrecht, tax counsel, Buffalo, N. Y.; E. H. Naylor, secretary-treasurer of the Writing, Cover & Tissue Paper Mfrs. Assns., New York City, N. Y.; C. A. Jasperson, secretary of the Nekoosa-Edwards Paper Co., Port Edwards, Wis.; Thos. J. Burke, secretary-treasurer of the Cost Assn. of the Paper Industry, New York City, N. Y.

Kellogg Talks on Truth in Business

"EVERY business man has the right to know all the essential facts in connection with the production and distribution of his product, but he has neither moral nor legal right through agreement with his competitor to endeavor to bring about an artificial condition beneficial to himself and hurtful to the public," said R. S. Kellogg, Secretary of the News Print Service Bureau in an address upon the subject of "Telling the Truth in Business" before the meeting of the National Coal Association held at Cincinnati, Ohio, on May 14.

"Monopolies and artificial restrictions upon commerce are illegal and abhorrent to us, because they run contrary to our sense of justice and our conception of freedom," continued Mr. Kellogg. "But blind competition may be as disastrous as no competition in its ultimate effects. Intelligent competition is possible only when all the surrounding facts are known.

"Only upon a basis of facts is it possible for the public to be served in the manner it demands. Facts are sometimes disconcerting, but never so damaging as the gossip which circulates when facts are not available. Business done by daylight is permanently more successful than that done in darkness, and while the public may reap a temporary advantage from blind competition of either buyers or sellers, the public in the long run pays the bills for all economic losses."

The law of service, so well set forth by President Coolidge in addressing the Associated Press last month, was quoted in the words of the President as follows:

"'Complete independence means complete co-ordination and co-operation. From this principle arises the oft-repeated law of service—we can help ourselves only as we help others. A knowledge and an understanding of others become absolutely necessary, in order to make our ideals practical. One of the pre-eminent requirements of our country at the present time is to re-establish and emphasize in the public mind this law of service.'"

Continuing, Mr. Kellogg asserted that only through trade associations can the law of service be enforced in an industry consisting of many widely scattered units. The outstanding accomplishments of American trade associations have been in two fields, first, the development of standards of commodities and practices; and second, in the compilation of facts—statistics. Statistics are as necessary to the navigator on the sea of business as are compass, sextant and barometer to the mariner on the high seas.

"Big business" usually has adequate means of its own for securing necessary data. It is only through trade associations that the smaller operators are able to be informed and meet conditions that arise from day to day.

"It is illegal for competitors by agreement to:
"Fix prices
"Limit output
"Divide territory

"But commerce and industry assert that they have the inherent right to collect and distribute through their trade organizations statistics as to volume of production, shipments, stocks, orders, costs, wage rates and market conditions as to their own and competing commodities, all impartially compiled by a trained association executive and supplied without coloring by him to all who have a legitimate interest in the matters dealt with.

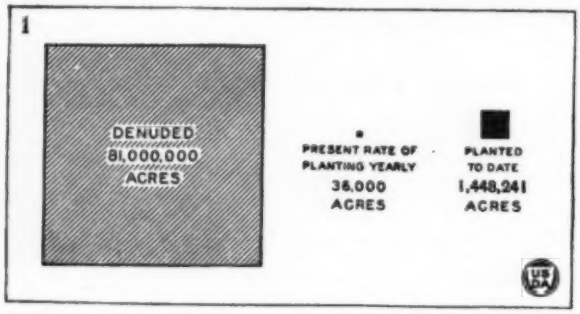
"Trade associations have opportunity for great service to their members and the public through the study of all items of cost and the setting-up of honest cost standards.

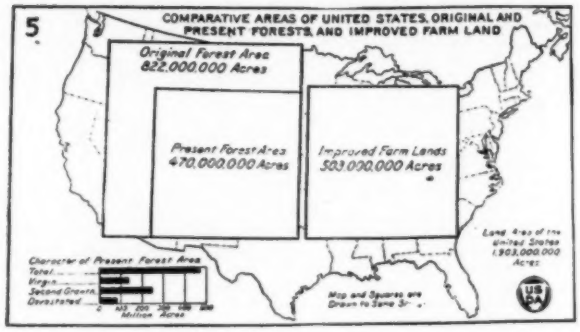
"The handling of cost data by trade associations should be on the same basis as other statistics which is: no guesswork; no advice as to selling prices or profit margins; no agreements as to fixed charges; no averaging or estimates to establish mythical 'costs' which in reality conceal a profit.

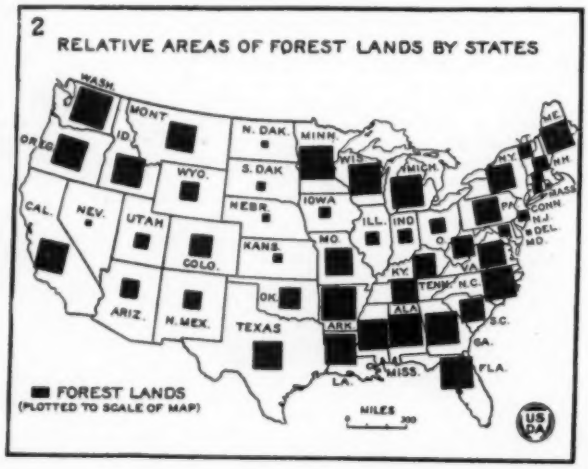
"Trade Association service in cost determination should be of as high-grade as that given by well-known firms of public accountants and equally impartial. Such service is of great value to an industry in: exposing incorrect methods; revealing uneconomic processes; checking wastes and indicating new opportunities for reducing costs.

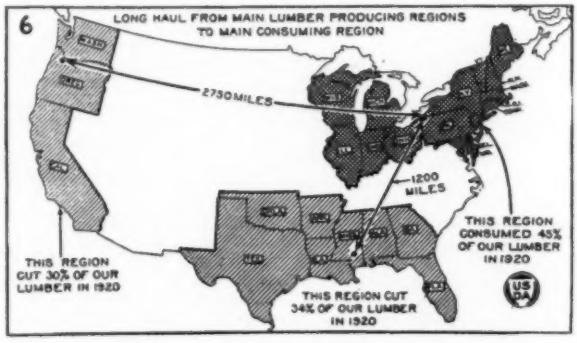
"Direct service of this sort to an industry is indirect but nevertheless tangible service to the public which buys the product of the industry and will react to the benefit of the public."

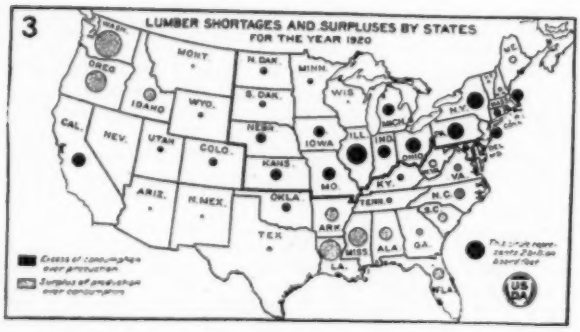
FOREST PLANTING COMPARED WITH FOREST DENUDATION.

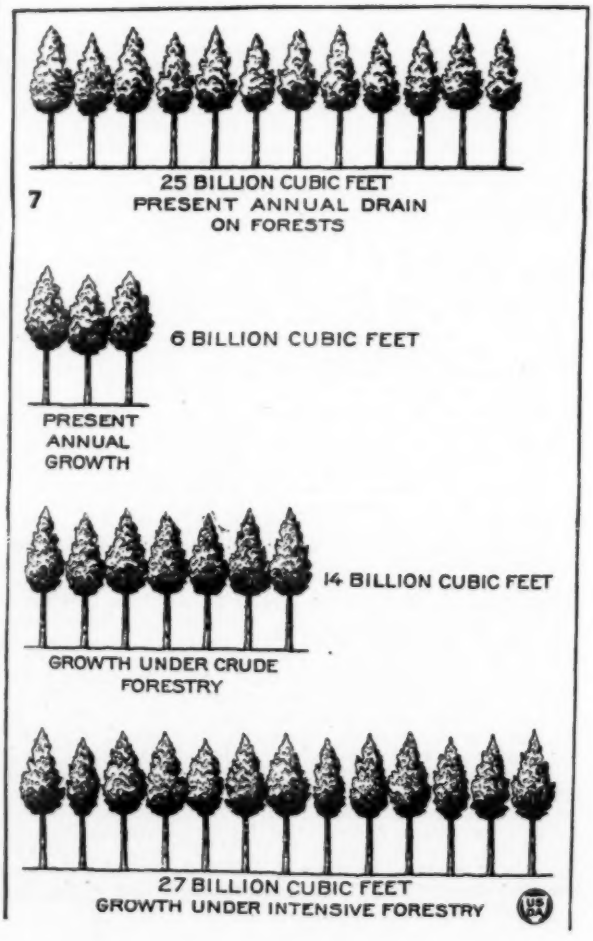


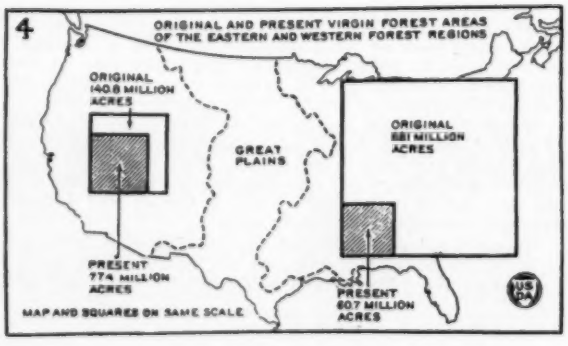





6
LONG HAUL FROM MAIN LUMBER PRODUCING REGIONS TO MAIN CONSUMING REGION
2730 MILES
1200 MILES
THIS REGION CUT 30% OF OUR LUMBER IN 1920
THIS REGION CUT 34% OF OUR LUMBER IN 1920
THIS REGION CONSUMED 45% OF OUR LUMBER IN 1920





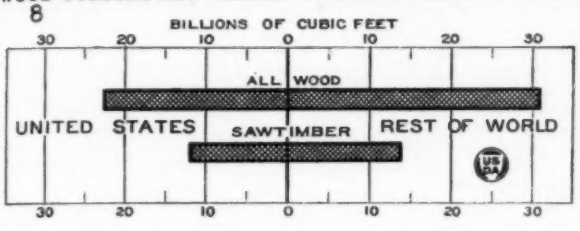


Some Graphic Forest Statistics

Charts from the Department of Agriculture's Latest Economic Survey Of Our Forest Problem

FIG. 1—There is a popular misconception that our forest lands, denuded by destructive lumbering and its ally, fire, can be easily reforested by tree planting. But in one day we cut nearly as much forest as we plant in a whole year. We already have 81 million acres of idle denuded forest, and up to the present have all told planted only about 1½ million acres, chiefly farm land. The only feasible solution of the reforestation problem is to use such care in logging and afford such protection from fire as to assure the natural reestablishment of the forest.

WOOD CONSUMPTION—UNITED STATES AND REST OF WORLD.



POSSIBLE INCREASE IN ANNUAL FOREST GROWTH BY IMPROVED PRACTICE.

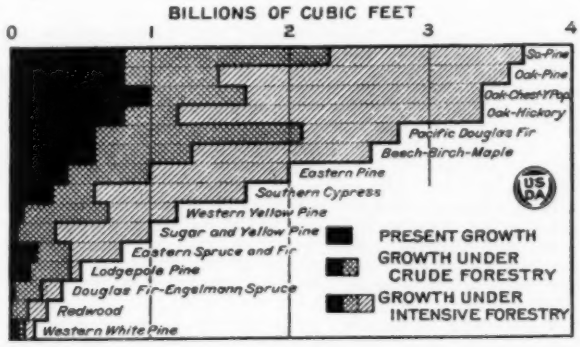


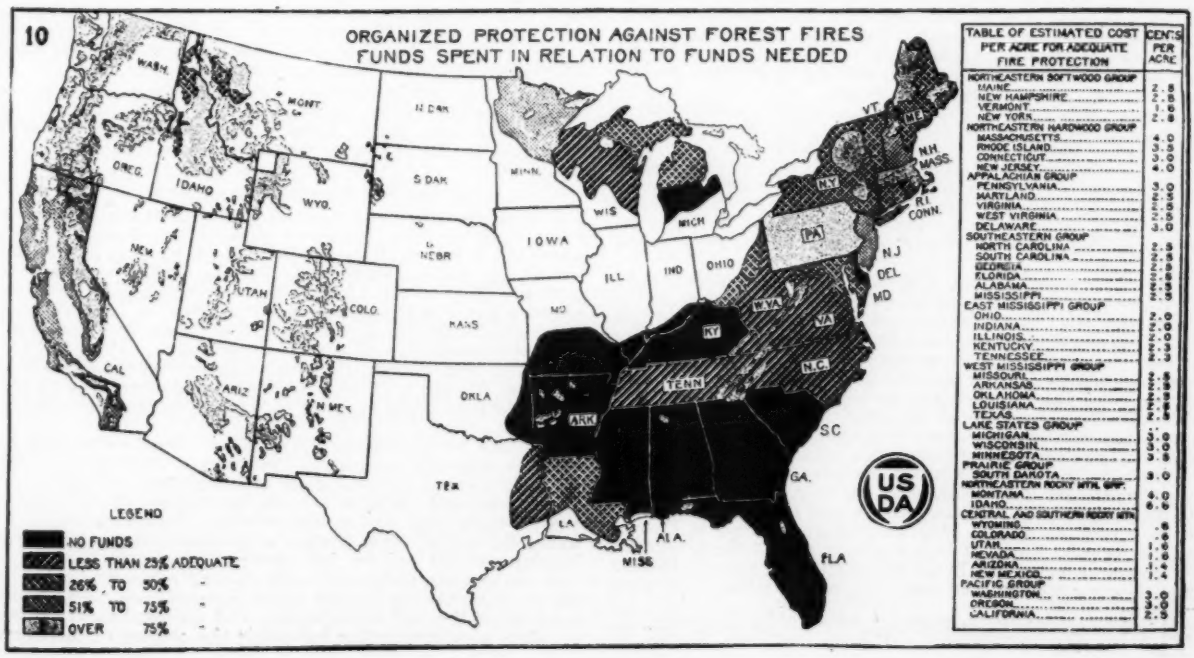
Fig. 2—Though the original forests have largely disappeared, we still have plenty of forest land, if rightly used, to grow the timber we need. Most of this land is in the East, where the need is sharpest. But this land has been, in the main, so badly abused by fire and destructive lumbering that it is either producing nothing or growing only a small part of the timber it could grow with protection and care.

Fig. 3—Our greatest industrial and food-producing regions—the area north and east of the heavy line—cut only 23 per cent of the lumber they use, and must ship in 77 per cent from the south and far west. They consequently have to pay an enormous freight bill on three-fourths of the lumber they use. Yet in these States are large areas of unproductive, burnt, and cut-over land, as well as thousands of acres poorly stocked with trees, that could be made to grow timber locally and save the freight bill.

Fig. 4—Only a remnant of the original eastern forest remains; and nearly half of the western virgin forest is already cut or burned. Although considerable portions of the eastern forests have been taken for farms, there are immense areas of cut-over land too poor for farming. These lands must be devoted to timber growing if we are to supply our future needs for wood.

Fig. 5—Forests once covered 43 per cent of our total land area, but timber mining and land clearing have reduced them to 25 per cent. Our remaining forest land—classified as virgin, second growth, and devastated—still nearly equals our improved farm land in extent. But 81 million acres of devastated land is producing nothing and 250 million acres are so poorly stocked with young growth that they are growing only a small part of the timber they can be made to produce by simple forestry measures.

Fig. 6—As the result of forest destruction in the East, the average rail haul for lumber has increased since the lumber industry began shifting from the South to the Pacific Coast.



The Pacific Coast States cut 30 per cent of our lumber in 1920 and the southern States cut 34 per cent. Forty-five per cent of our lumber was consumed in the region east of the Mississippi and north of the Ohio and Potomac Rivers. By simple measures of reforestation this region can again be made self-supporting in timber.

Fig. 7—The annual drain on our forests by cutting, fire, and other destructive agencies, is four times as great as the amount of wood grown each year and nearly twice as great as we could grow under crude forestry, consisting of leaving seed trees where necessary and protecting growing forests from fire. In fact, the drain is almost as great as what we can expect to grow under the very best methods on our present forest area of about 470 million acres.

Fig. 8—The United States consumes nearly as much wood as all the rest of the world. But in spite of this immense drain on our forests we are making a wholly inadequate effort to replace the vanishing forests with a new growth. The first step is to stop the forest fires that destroy mature timber or young growth on seven million acres every year. With protection from fires must go protection from destructive logging.

Fig. 9—The present forest growth of the United States is insignificant compared with that possible if timber were treated as a crop. The four largest potentially producing regions, represented by the four top bars, are in the Southern and Central States. Most of the present forest growth is volunteer and has come in spite of forest fires and destructive logging. Even by crude forestry, consisting of fire protection and the leaving of a few seed trees where needed, growth would be greatly increased; and with really intensive methods we could grow all the timber we need.

Fig. 10—The most urgent step in restoring our forests to continuous growing of timber is to organize adequate protection against forest fires. Each year some 7 million acres of forest is burned. Fire, which goes hand in hand with destructive logging, has, through repeated burning of young trees, greatly reduced forest productivity. A little more than half our forest area receives more or less adequate protection. Twenty-seven States have organized protection, and practically all Federal forest lands are protected. In the South, one of our most important forest regions, eight States have no protection, and the rest have wholly insufficient protection.

Steam and Power for the Pulp and Paper Mill *

By H. S. TAYLOR
Consulting Engineer

STEAM and power, two short words of the English language, that so easily fall from our lips and pen with rarely a thought of what they represent to our world of today. Functioning as heat and energy they give mechanical life to what we call our world, that in turn enables it to provide for and keep the God given life in you and me, as we have become accustomed to live in this day and age.

It is probably safe to say that no industry could survive without steam or power, at least it is inconceivable to consider an industry, as we understand the term, without either, but it is without doubt most safe to say that without steam or power, there would be no pulp or paper industry, and should we be all agreed upon this assumption then it can be truthfully said that in as far as manufacturing and process goes, steam and power may be called the heart of the pulp or paper mill.

This reference to heat and energy as the heart, while figuratively speaking, is mentioned to bring more clearly to your minds the importance of steam and power to the industry. Practically speaking, however, the heart in all forms of life is born within us to perform a set series of functions, while heat and energy have been given us as processes or forces of nature, with the responsibility as ours, to first discover their different forms, and second to cause them to function in the most efficient way as required by the many different industries that live and progress through this responsibility.

The pulp and paper industry manufacturing as it does a most diversified line of products, and with its mills scattered from the far north to the far south, and from coast to coast, holds a position that no other basic industry does in the use of the different forms of heat and energy. At the same time its processes, especially in the paper mill, are such that steam as a heating element and also as a power producer is often inseparable, and these two conditions have naturally lead to a wide range of steam and power applications and costs that while to a great extent are alike for similar location and grade of product, nevertheless vary sufficiently even in mills of the same character to cause a greater variation in operating conditions and costs than should be the case.

Costs Unimportant in Early Days

In the earlier days of the industry the subject of costs was given scant attention, and those who did have an idea of their steam and power costs, or manufacturing costs either for that matter, kept the information strictly to themselves, and the industry itself as well as those contributing to it, worked to a great extent in the dark in as far as advancement was concerned.

This condition being as it was existent through a considerable period of the industry's earlier development, accounted for many steam and power installations and applications that were not best suited to the demand of the mill, and with a number of such installations in operation today, we have their costs to contend with in a comparison of the whole.

Continuous expansion in volume of production and range of products manufactured brought competition into play with its demand for better qualities and lower prices, and at this stage accurate determination of the costs entering into different departments of the industry came to the fore, and the real importance of steam and power from a conversion standpoint was apparent.

The industry in general in its mills of today utilized one form of heating element—namely: steam, and power in four forms of energy, namely, steam direct, steam electricity, hydroelectricity and water power direct, and they can all be found in one mill or another, and what is more in many different combinations of prime and secondary movers.

On a cost basis steam, of course, in any form ranks the highest, next hydroelectric, and the lowest hydro power, but the fact that steam will give up its kinetic energy and thus produce power, and yet retain 90 per cent of its value as a heating element, allows the use of steam power in this dual role, at a lower cost than hydroelectricity except in rare instances.

There are installations in operating mills of today that utilize hydroelectric for the entire power supply, and dry with live steam. Such an application, however, must be a preference on the part of those in charge from an operation standpoint rather than cost, as electric power must, except in the most unusual case, be delivered at a lower cost than is recognized by the industry to allow the kinetic energy of the steam used for drying to go to waste and replace with energy from other sources.

With steam turbines as prime movers operating under an initial pressure of 200 pounds with superheat and a back pressure of say 8 to 10 pounds, loss in condensate, or in reality B. T. U.'s, should average about 6 per cent, and with initial pressure of around 125 pounds and no superheat, with reciprocating engines as prime movers, loss may run to 15 per cent, making an average or say 11 per cent loss.

With a steam plant required in any case the cost of this loss in condensate is really the cost of combustible only, and on this basis electric power would have to be delivered at under $12.00 per H. P. year to permit it to replace steam power on a cost basis.

The Two Prime Classes of Power

This all leads to the two primary classifications of mills of today from a steam and power standpoint. First the mill, where low priced hydro or hydroelectric power is in abundance, and steam can be considered only as a heating element, for drying or cooking. It happens that the drying demand of the average paper machine producing weights of product from catalogue papers up, is always greater than that (less condensate) required to power its variable line. Thus the mill under this first classification, with steam power in volume only to utilize drying or other low pressure requirement, all other power demand being supplied through hydro or hydroelectric sources.

The mill where steam power, either direct or electric is the cheapest form available is the second classification. With this mill a steam boiler plant is essential from a heating and drying standpoint and to produce its own power means only power equipment and more boilers. Therefore, the mill under the second classification with steam supply both as a heating element and for full power requirements.

A modern newsprint mill with either its own hydroelectric plant, or supplied with low priced hydroelectric power is an example of the first classification, and a book, board, writing or other such installation located in the centers of commerce

*Presented at the Fifth Annual Convention of the American Pulp and Paper Mill Superintendent Ass'n, at Dayton, Ohio, May 22, 1924.

where steam power is the most economical form of energy available represents the second classification.

Between these two primary classifications there are secondary classifications too numerous to mention. Some mills generate a portion of their power and purchase the balance, other mills through necessity use part hydro or hydroelectric and make up the balance with steam, and yet other mills generate steam only as a heating element and purchase or generate their entire power supply, but in all cases the application is but a variation of the arrangement under the two primary classifications, and in general the costs vary in accordance therewith.

The newsprint mill selects its location adjacent to cheap power in abundance from necessity. The power demand per ton of newsprint is in excess of that for any other grade, while selling price being among the lowest, makes steam power, except through heating requirements, prohibitive as you will later note.

A tabulation of steam and power requirements and costs for this grade of product follows:

	Power	Steam power drying requirements included	Steam heating element
Mechanical pulp per ton	75		
Sulphite pulp per ton	22		8,000 lbs.
Paper mill	10	15 B. H. P.	
Miscellaneous	5		300 lbs.

With a furnish of 80 per cent mechanical pulp and 20 per cent sulphite pulp we have the following:

	Power	Steam power	Heating element
Per ton newsprint	79.40	15 B. H. P.	1,900 lbs.

Based on 300 day operation per year, with power (either hydro or hydroelectric) at $20.00 per H. P. year, steam boiler horsepower at $140.00 per year, equivalent to steam at 60c per 1,000 pounds, total cost of steam and power per ton newsprint may be considered as follows:

	Power	Steam power	Heating element	Total
Mechanical pulp .8 ton	$4.00	....	...	$4.00
Sulphite pulp .2 ton	.29	....	.96	1.25
Paper mill	.67	7.00	.18	7.85
Miscellaneous	.33	....	...	.33
Totals	$5.29	7.00	1.14	$13.43

Showing steam and power costs equivalent to 18 per cent of selling price as of today. If steam power were utilized throughout on the above basis, assuming yearly cost of a steam power as $90.00, the steam and power cost per ton of newsprint would be $31.96, a figure that is, of course, out of all question.

Hydro power is being sold to mills of the industry today at prices ranging from $8.00 to $15.00 per horsepower year, and hydroelectric from $12.00 to $40.00 for primary power, and from $7.00 to $21.50 for secondary power. Such a range calls naturally for a corresponding variation in power costs, and makes comparisons difficult.

For power cost per ton of mechanical pulp, cost per horsepower year can be divided by four for 300 days, or by five for 350 days' operation, or use formula as follows:

$$\text{Power cost per ton} = \frac{75 \times \text{cost per H. P. year}}{\text{No. days per year operated}}$$

For power cost unbleached sulphite pulp cost per horsepower year can be divided by 15 for 300 days or by 17 for 350 days' operation, or use formula:

$$\text{Power cost per ton} = \frac{22 \times \text{cost per H. P. year}}{\text{No. days per year operated}}$$

For a mill under the second classification we can take a book or board mill, with steam and power plants complete, such as can be found in many centers of commerce today. Such papers sell at a price that will permit of higher power costs, and with location in the larger centers, accessibility to raw product supply and market for finished product show a further saving.

For a book paper conversion mill of say 75 ton daily capacity an average demand of 26.5 boiler horsepower can be taken, this supply for drying, heating or other low pressure requirements, as well as all power demand, furnish including 25 per cent old paper.

Power load for this same mill may be taken at 25 horsepower per ton of product, and with steam in this case at 54 cents per 1,000 pounds, equivalent to $112.00 per horsepower year, and power (generated only) at .0015 cent per K. W. hour, steam and power costs per ton of paper may be considered thus:

$$\frac{\text{Steam at 112.00 \$ per H. P. Year}}{9.89} + \frac{\text{Power at .0015 per K. W. Hr.}}{.68} = 10.75$$

or steam and power cost for paper converting plant alone at $10.57 per ton paper.

This figure of $10.57 when based on 60 cent steam would be equivalent to $13.01 in comparison with $7.85 for newsprint conversion, an increase of 65 per cent and to this figure of $13.01 should be added the power costs that would be included in cost of raw pulps making up the furnish.

The quantities of 25 horsepower and 26.5 boiler horsepower per ton of paper, as assumed for this book mill, are in general an average. It is, in the writer's estimation, possible, however, to reduce the boiler horsepower figure to 22, with power delivered from turbine driven plant with steam extraction for drying or other low pressure requirements.

The average demands of steam and power for board, or other heavy paper plants vary little from that of the book mill above referred to, and for Kraft or other papers requiring excessive beating action the power demand only can be increased about 50 per cent, adding but slightly to the figure of $10.57.

Cost of steam and power for sulphite pulp (unbleached) have been given under newsprint at $6.25 per ton. For bleached pulp add 80 cents for steam and power, and for dried rolls add 70 cents, making a total for bleached sulphite in dried rolls of $7.75.

Costs for sulphite given above are on the basis of hydroelectric power at $25 per horsepower year. If energy utilized in the processes is from steam in place of water, cost will be increased, based on $90.00 per steam horsepower year, $5.13, making a total of $11.38 per ton in place of $6.25. As can be readily seen this condition makes all steam operation practically prohibitive, although there are one or more sulphite producing plants only on an all steam basis. Average costs for sulphate and soda pulp due to their somewhat different processes are slightly in excess of those for sulphite, but not sufficiently to deserve direct mention.

It must be kept in mind that figures mentioned are based upon assumed unit costs, and while fair, from an average standpoint, must be adjusted to fit the individual mill.

The range of hydro and hydroelectric power costs, that are today being met by the mills of the industry, has been previously mentioned, and the range of steam costs is almost as great.

Big Variation in Power Costs

Records from a number of United States mills and Canadian mills show a range of from 39 cents to 67 cents per 1,000 pounds of steam, with an average of 54 cents for the former, and from 51 cents to 68 cents, with an average of 60 cents for the latter. One mill using oil produces steam for about 40 cents and another with pulverized coal equipment has a 39 cent cost.

Thus for one mill steam is costing 67 per cent more than for the other, and it may be noted the average of 54 cents for the United States mills is also the average of lowest and highest, showing that the range is well equalized.

Considering these United States and Canadian mills, figures as to steam and power conditions are of interest, as they explain to a great extent the range of costs.

The value of coal varies between 11,000 and 13,600 B. T. U., a difference of 68 per cent in the quality of the coal. The feed-water temperatures vary from 130 degrees F. and 210 degrees F., while the dry stack gases range from about 250 degrees F. to 575 degrees F.

The evaporation per pound of coal, which is greatly dependent upon the quality of fuel, is about 7.75 for the lowest and 11.0 for the highest. The overall of the efficiency of the boiler house varies from about 59 per cent to 75 per cent at ratings between 104 per cent and 207 per cent.

It goes without saying that there should not be such a variation in different mills of a single industry, and it can be readily seen that steam and power costs are a question of computation for the individual mill rather than the industry in general. The reason, however, for the variations as they exist is mainly due to

First: Installation of an earlier period in many mills, that are not well fitted for the demand upon them and, therefore, have a lowered efficiency.

Second: Variation in quality of combustible in different sections of the industry.

Third: Lack of attention given to steam and power departments, due mainly to the fact that paper is the product manufactured, steam and power being in a way by-products.

How

To Speed Up Your Paper Machine—

AND

Better the Quality of Your Paper

IT IS now possible to feed stock directly to the wire of a fourdrinier paper machine at any speed desired, without resorting to the expensive process of pitching the wire.

The device that performs this important function also eliminates slices, prevents the wear caused by slices, and makes possible accurate and fine adjustments assuring a sheet of uniform thickness.

The new device is the Voith High Pressure Stock Inlet. We have for you an interesting pamphlet, fully illustrated, describing it in detail. Write for your copy today.

VALLEY IRON WORKS CO.

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Fourth: Leaks and other losses throughout the installation and mill in general.

There has been during the past few years constant improvement in steam and power equipment and application throughout the pulp and paper industry, most especially the latter, and owing mainly to diversity of location and grade of product, the manufacturer should consider application or improvements for the individual mill rather than for the industry in general. Each mill has its own conditions to contend with, and while a divergence might be but slight, it might at the same time have an important bearing on the application or operation of steam and power.

A word might be said here with reference to initial costs of steam and power installations. An average steam plant for the paper mill should cost between $75.00 and $110.00 per normal rated boiler horsepower, $90.00 being a good average figure.

A motor installation for the pulp or paper mill, with motors, complete wiring and switching installed should cost around $30.00 per connected horsepower. This figure may go as high as $35.00, and as low as $25.00 per horsepower.

A turbo generator installation for the average mill runs about $50.00 per kilowatt installed, this figure being on the basis of a 2,000 kilowatt unit, the amount being somewhat higher for lower rating and less for higher.

It is most assured that steam and power costs for the pulp and paper industry will not, except in new locations far distant from the market, be reduced, and it is more safe to say that they will in general increase by a certain increment year by year, and if so the importance of heat and energy to the industry will increase in a like proportion.

It can, therefore, be said in closing that steam and power from combustible to final use should receive careful attention, and accurate records of performance and costs be kept, with the relation referred to in cost of unit of steam or power delivered, and in terms of finished product. If also new plants are to be installed or improvements made to present plants, be certain that present as well as future conditions are fully considered, for once the plant or improvement is completed, lack of such consideration may offset the results that were confidently looked forward to.

Some Reasons Why We Have a Newsprint Section *

By JOS. H. SLATER, Chairman
Gen'l Mgr., Escanaba Pulp & Paper Co.

THE growth of the Superintendents' Association has now reached a stage where in order to avoid confusion to reach most efficiently the men and superintendents engaged in the different lines of paper manufacture, it has been deemed advisable to form several sections where singular attention and emphasis may be given to the outstanding problems met in producing the different kinds of paper.

The decision to have a Newsprint Section of the Superintendents' Association has really been delayed. The great and revolutionary changes that have contributed to the advancement of the whole paper industry by the special branch, known as "Newspaper Manufacture" are certainly entitled to special recognition.

For many years an incessant, aggressive struggle has been carried forward, and newsprint manufacturers and their men have never ceased in their efforts to drive paper machines at a higher and still higher rate of speed, in order to meet the demand for a cheap and abundant daily medium for the thoughts, the history, and the aspirations of a restless democracy. Newsprint paper is one of the basic materials of our civilization, and not by accident are the greatest nations also the greatest newspaper readers.

In the effort to meet the constantly increasing demand for newsprint paper, great mechanical obstacles have been surmounted. Wonderful skill and boldness of method have been developed, so that this department of paper-making can show a proud record of achievement made possible by the financial courage of mill owners ably assisted by the hard work and high intelligence of their superintendents and men.

The manufacture of writing, book, and other fine papers has to consider problems of manufacture, methods of procedure, process cost features and refinements peculiar to his own grades. This is also true, but usually in a different direction of the manufacturer of the many kinds of board and container papers. Kraft, tissues, specialties, and the intermediate grades have still other individual features which put them into a class by themselves, and while it is true that there is a constant overlapping of the different grades, and a wide degree of mutual interest, yet we must specialize to save time. We venture to believe that among all the various grades of paper none is more important than newsprint, and no other grade is so constantly facing such gigantic and perplexing problems. Perhaps for these very reasons no other branch of the paper industry has contributed in equal measure to the advancement of the art.

When we reflect on the magnitude of the manufacture of ground wood pulp, almost wholly given over to supplying raw material for the making of newsprint paper, we are face to face with an industry within an industry, containing its own very important problems of power, and the handling, preparing and especially the proper and economical grinding of vast quantities of wood. Despite the progress and improvement in producing ground wood pulp in recent years, we are convinced that in this department much remains to be discovered in making just the proper kind of fibre, in maintaining uniformity of product, and obtaining an increased amount of pulp from a given expenditure of power. It seems altogether probable that in the immediate future, safer and faster running paper machines will depend more on the ground wood mill than on further mechanical refinements on the Fourdrinier machines.

In the mechanical wood department there are many minor unsolved difficulties and problems that have little connection with other kinds of paper than newsprint and we feel that the newsprint section superintendents cannot do better than give this part of their mills most earnest thought and attention. This in itself is an excellent reason why we should have a Newsprint Section.

The production of sulphite pulp for use in the manufacture of newsprint calls for entirely different treatment than that for other uses, and rapid cooking with a general speeding up of the process throughout the sulphite mill brings forth difficulties not so often met with in preparing chemical pulp for other grades of paper. It is quite within the range of possibility that earnest thought, the interchange of experience and energetic action on our part may do much to offset the importation of sulphite, at least for Newsprint paper.

In the paper mill itself—in the beater room, which newsprint has nearly abolished, and in the machine room, methods have been adopted and are generally followed, which puts newsprint in a unique position. We have no desire to make invidious comparisons, or cast any reflection on the manufacture of any other grades of paper, but we do claim for the manufacture of newspaper, that it is "a man's game," calling in the highest degree, for quick, correct judgment, resourcefulness, patience, vision, endurance, inventiveness, and the iron will and determination that can not be content with anything but the largest measure of success. The splendid news mills scattered over this country and the sister nation to the north of us, the many magnificent paper machines, marvels of speed and cunning workmanship, are monuments to these qualities.

Newsprint Mills Advancing Rapidly

The newsprint mills have ever been the pioneers of the paper business, and the whole industry has benefited enormously from the daring innovations frequently introduced, and the improved machinery demanded, also from the cautious and wise disregard for cost of improvements often displayed with the object in view of increased speed or production per unit. The newsprint mills have ever been the leaders and at no time more than today. With the passing years, first one and then another has contributed his part toward the building and perfecting of the machines that go to complete a mill. Much has been tried and has promised well for a time, only to be cast aside for something better, but all this has meant progress, until the paper machine running 800 to 1000 feet per minute is an accomplished fact, and the single newsprint paper machine making 100 tons of 31½-lb. paper in twenty-four hours has arrived.

It can be truly said that here is an industry, and especially the newsprint section of it, where no live manager or superintendent can be a hermit and also be a success. The spirit of research and scientific inquiry is more active now than ever before. Nothing is accepted as final by the progressive news mill. Truth and error are constantly being sifted. Many bright minds are giving their best, so that new and remarkable developments are constantly taking place. We are borrowing much that is best from any other industries. Clear definite principles in a hundred different ways, all leading toward simplification and economy, are being adopted. We believe more common-sense systems must be followed, waste must be curtailed, and better training of skilled paper-

*Presented at the meeting of the Newsprint Division of the Superintendents' Association, held at the Manchester Hotel, Middletown, Ohio, during the Fifth Annual Convention, May 23, 1924.

—Caldwell—and the Service Factor

IT HAS been a point of pride with the Caldwell organization to measure plant efficiency by the number of orders shipped on the day received.

Caldwell keeps half-a-million dollars worth of equipment in stock at all times. Through many years of experience we have learned which equipment is most commonly ordered, and we utilize this experience in the maintaining of our stock.

No matter what your needs may be in the elevating, conveying and power transmission field, there is a Caldwell product adaptable for your use.

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CALDWELL

makers and operatives secured. Only in this way may we continue to lead the world in newsprint manufacture, and justify ourselves as a strong useful organization. We have no doubt as to the answer which this Newsprint Section will be able to make.

The Kraft Pulp and Paper Industry *

By B. T. McBAIN

THERE is one fool thing we have all got to get out of our heads and that is: just because today some of us have new mills or are located where wood is cheap and can make pulp and paper a fraction of a cent cheaper than mills in some other localities, that we are making a market by selling our paper for nothing or cutting prices and taking business away from our fellow workers. I believe in competition but I think that competition should be sane competition with a profit to the fellow selling the goods and further that quality competition is what we all should strive for, not price cutting and ruinous competition such as some of our superior officers are at times charged with.

Of course, we as superintendents are not supposed to be interested in sales matters, but as I see it, the superintendent doesn't go far when the price is cut below cost of manufacture before he hears from these same superior officers.

During the past year, some new mills came into the market on Kraft pulp and paper. They came in at a time when the market was slow and the jobbers warehouses were full of paper, bought at relatively high prices. Someone thought he had to sell some paper so he cut the price and cut it deep. He got no business, for the mills already in the market were notified by their customers, and these prices were met. This caused the customers to have a great fear of placing further orders. Their stocks were bought at the higher figures and they stood to lose money in large quantities. They decided to use up their stocks and place no more orders, the result being that December, usually a slow business month in the wrapping paper game became so slow that many mills were forced to shut down from half to even full time.

So much for prices; we are all governed by the selling price and cannot get away from it.

The Kraft Committee of the Standards Committee of Fifteen will have a report to make at this Convention and this talk therefore, will not touch on the manufacture of Kraft pulp, but will refer to some of the ideas already brought to light in the experience of making Kraft paper.

To begin with, of course, the Good Lord does not make all trees alike and the fibre therefore has different characteristics which must be given consideration.

In the second place, the Kraft pulp mill can make or spoil the best of fibre in the best of trees the Good Lord does provide.

There is some Kraft pulp, so called, that cannot be made into Kraft paper (Kraft means strong) no matter what treatment it is given.

The pulp mill, however, can do much to help the paper mill in preparing of the pulp before it goes to the beaters, by cooking it to different grades of softness or hardness according to the purpose for which the paper is to be used.

With the different grades of pulp available it is a difficult matter to give a prescription that will be a "cure-all" for all Kraft paper mill or machine ills.

Many of you buy Kraft pulp from foreign countries and some may be buying pulp which has already been partly beaten and Jordaned, so these pulps must be handled according to their condition.

Where one grade of pulp is received in lapform, one treatment must be given, while another pulp which has been over a drying machine requires different attention, for it has been the writer's experience that machine dried pulp does not produce as strong a sheet of paper as that received in the lap form.

Pulp for converter purposes must receive different beating than that for point for pound Mullen test of wrapping papers.

In our own pulp mills we try to anticipate the grades of paper on the machine program and to make the kind of pulp the various orders call for.

But, in the case of point for pound Mullen tester wrapping paper with call for the most raggy tear that can be had in addition to the strength and folding tests, we are particular not to run the beaters to any certain "rule of thumb" feel but to a known freeness test with the Green tester. It is a difficult matter to say just what this test should be for pulp of other makes than our own but we have found that it is a guide for use in other mills on our own pulp, for only recently we shipped some of our pulp to another plant not versed in the manufacture of Kraft papers, Capt. C. E. Youngchild and the writer went to that mill and with the aid of the tester mentioned, the testing done by the other mills men, paper of a better test than our own average was produced.

With 2000 pound beaters equipped with regular bars and the roll down hard after four hours the pulp should test around 575 and after the Jordan around 300 with four-tenth percent air dry weight of stock in suspension at temperature of 16 degrees C.

Sometimes this test comes at an earlier point of beating and sometimes the stock requires a longer time, all depending upon the point to which the pulp is cooked, in our opinion.

Many mills depend entirely upon the beater for hydration. Some use the Jordan with great quantities of power per ton. Some use large Jordans with cluster bars and some small Jordans with bronze fillings.

Our experience is different than any of the rest, but as we manufacture our own pulp and handle the cooking for the business at hand, as above referred to, we think this has much to do with the results we are getting.

We have thrown out all the large Jordans with 300 H. P. motors and are getting very much better results with the Youngchild fillings in our beaters, beating to the freeness desired and then lightly brushing in small Jordans with very much smaller power consumption per ton but again to the desired test on the Freeness or Slowness tester as some people prefer to term it.

But the one point—we must all get away from it—the Mullen tester cannot be used alone as the test at which Kraft paper is satisfactory. It is an easy matter to make Kraft pulp into paper testing a point for pound or better, but it is not then necessarily a good wrapping paper for the sheet may be so brittle and short that it cannot be folded around a package with square corners without cracking.

We, as paper mill superintendents, must make a sheet of paper, as stated in the early part of our talk, that will have the folding and wrapping qualities even if the test is not 100% or better on the Mullen tester, for the market today is demanding a sheet which will hold together under the most severe treatment and rough handling either in delivery wagons or in the mails and the Mullen test is not a real strength test for a wrapping paper.

The sooner the consumer realizes this point the better for all concerned for much good paper is now being spoiled in the making in the endeavor to get the specified Mullen test while even more paper is being wasted in the hands of the consumer, because it is not a satisfactory wrapping paper even though testing up to the standard ordered.

Again, however, I am going to touch upon selling prices. If it is to be the "The survival of the fittest," then it is up to you superintendents to get your costs of conversion down, first in the manufacture of the sulphate pulp and second in the making of the Kraft paper in the paper mill, but I cannot for the life of me see the necessity for sales departments giving paper away just for the fun of getting orders.

The Picture Industry has a Dictator. The Baseball Industry has its Judge Landis. The Pulp and Paper Industry needs something to put real good, hard common sense into the heads of those who are responsible to the end that their expensive cost systems are used and nothing sold except at a price which will at least return a new dollar for an old one, with something in addition to keep it shined up.

*Presented at the meeting of the Coarse Paper Division of the Superintendents' Association, held at the Manchester Hotel, Middletown, Ohio, during the Fifth Annual Convention, May 23, 1924.

Makes World's Record

For the twenty-four hour period 8:00 a. m. May 14th to 8:00 a. m. May 15th. No. 6 machine of Price Bros. & Co., Ltd., Kenogami, P. Q., Canada, ran at constant speed 770 feet per minute, trimming 219 throughout the whole period on 32-pound basis-weight paper, lost a total of five minutes for four wet-end breaks and made an actual production of 106.6 tons against a possible 108.3 tons, or, on that basis, 98.4 percent efficiency.

The paper machine upon which this record was made was manufactured by Messrs. Charles Walmsley & Co., of Bury, England, and Montreal, Canada, and the machine is driven by Harland Interlock Sectional Electric Drive.

At the annual meeting of the stockholders of The Sandy Hill Iron & Brass Works, Hudson Falls, N. Y., the following directors were elected for the ensuing year: A. J. Kennedy, R. C. Tefft, Jr., C. W. Kellogg, H. L. Broughton, and J. M. Ferris. The following were elected officers for the ensuing year: A. J. Kennedy, president; R. C. Tefft, Jr., vice-president; J. M. Ferris, secretary-treasurer.

ALABAMA OPPORTUNITIES

Quick Growth of Pulp Supply in Alabama

Cut over lands in Alabama offer unlimited possibilities for the regrowth of pulp supply.

Low, marshy lands along Alabama rivers—the Warrior, Coosa, Tallapoosa, and Tennessee afford a plentiful supply of rapidly growing gum woods.

On Alabama hillsides and in her river valleys other types of hard and soft woods—notably a vast expanse of pine forests covering 15,500,000 acres and estimated to contain 23,316,400,000 merchantable pine stand feet are found.

This Southern Pine Belt was recently characterized by a national authority as—

"The greatest single asset in the way of a potential source of coniferous wood existing anywhere on the face of the earth."

In addition to the almost unlimited supply of coniferous woods now standing, repeated tests have proved that—

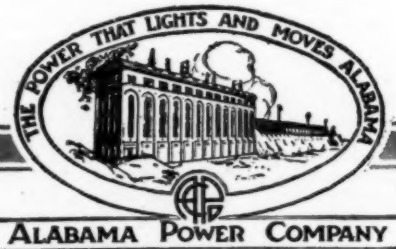
Timber Will Regrow to Pulp Size in Alabama in Twenty Years

and also that—

The growth of two cords of wood per acre may be obtained on Southern lands under proper forestry management.

Hydro-electric power now available to the amount of 600,000 horsepower, accessibility to markets in the Middle West and shorter hauls to those of the New England states, a mild climate, adapted to year around logging operations, and a bountiful supply of native labor—are the other factors which are pointing the way to **VIRGIN ALABAMA WOODLANDS** as a practically untapped source of raw materials for the pulp and paper making industry as well as the quick replenishment of pulp supply.

For further information on PAPER MAKING IN ALABAMA write the Alabama Power Co., Commercial Department, Brown-Marx Bldg., Birmingham, Ala.



ALABAMA POWER COMPANY
BIRMINGHAM, ALA.

All Sides of Paper Production Represented at British Empire Exhibition at Wembley

Canada Has Splendid Show of Her Resources. Newfoundland Features Hydro-electric Power Plant for Paper Mills

By A. EDWARD HAMMOND

Associate Member of the Incorporated Sales Managers' Association of the United Kingdom

IT CAN be said quite truthfully that the division of the Palace of Industry at the British Empire Exhibition, which is devoted to paper, printing, stationery and maps, and known to the guides and attendants as "Section U," is really representative of every side of paper production and of every department of the stationery and allied trades.

The striking thing about the British Empire Exhibition at Wembley is that each building is a complete exhibition in itself. In fact, it would not be an exaggeration to say that each individual section of the industrial side of the exhibition was a thoroughly complete exposition of every side and side-shoot of the trades concerned.

For the first time in the history of British exhibitions an attempt has been made to present, not a mass of individual efforts, but a series of co-ordinated displays in which each industry is taking part as a whole, and not as a group of unrelated firms. In the Palace of Industry the vast area has been divided into ranges of halls and galleries, and, in allotting space, the whole idea of the exhibition authorities has been to ensure harmony among the individual sections. Wherever possible, arrangements were made, not with individual exhibitors, but with trade associations.

In the early days of the exhibition it was seen that a large number of sign-letters would be required. Was the writing of the signs to be left to individual exhibitors, or was there to be any attempt made to ensure a measure, at least, of uniformity? The Director of the United Kingdom Exhibits, having enjoyed an architect's training, had strong views on the subject. He had a specimen alphabet drawn by Mr. Herrick, the well-known poster artist, who designed the lion, which is the symbol of the Exhibition, and this he made the chief standard lettering for all the Palace of Industry. It is a slight variation of the lettering on the Trojan column at Rome, which is the form of all fine Roman lettering. Sign-writers were tremendously impressed by the beauty of the alphabet, and as good lettering is almost as easy to copy as bad, one of the biggest sign-writers in the country at once set thirty of his draughtsmen to do nothing for six weeks but practice the new letters. Already the Herrick letters can be seen adorning advertising literature and shop windows all over the country.

Many British Mills Represented

The Exhibition by the Paper Makers' Association of Great Britain and Ireland, consisting of a complete paper-making machine in miniature, is of course the largest individual exhibit in the paper and allied trades section, and incidentally the one which attracts the most interest. The following British firms are represented in this exhibit, and each of them has supplied a part or parts of the model plant:

Sir W. G. Armstrong & Co., Ltd.
Bentley & Jackson
T. Bolton & Sons, Ltd.
George Christie, Ltd.
Crompton & Co., Ltd.
General Engineering (Radcliffe), Ltd.
Harland Engineering Co., Ltd.
C. H. Johnson & Sons, Ltd.
Kenyon & Sons, Ltd.
Mather & Platt, Ltd.
Miller & Co., Ltd.
H. Morris, Ltd.
Porritts & Spencer, Ltd.
Trotman Patent Dandy Co.
Vickery's Ltd.
Charles Walmsley & Co., Ltd.
Watford Engineering Works, Ltd.

This exhibition of paper making is represented by smaller shows which represent a wide range of interests connected with paper and allied industries. The first individual exhibit one comes across is one of a firm specializing in show-cards, show-cases, and advertising novelties. The next stall is occupied by a world-famous map house, and in it is featured every kind of map for commercial and educational use. Five other map-producing firms are represented, the British Government also having an exhibit devoted to ordnance survey and military scale maps.

One firm represented specialties entirely in the printing of menus, another firm shows solely inked rubber pads, stamp-pads and their accessories. Every type of printing is represented by at least one firm in each particular class. For instance, there are one or two exhibitors of fine art color printing, and among the general printers are some of the biggest and oldest printing organizations in the country.

Some idea of the extent and variety of the allied trades represented in the paper trade section of the Palace of Industry will be gleaned from the following list of products which are being exhibited: fountain pens, steel pens, crayons, pencils, stenciling and modeling materials, ink-printing, copying and writing, drawing instruments and artists' colors and materials, bookbinding, duplicating and addressing machines, loose-leaf books, letter files, diaries, photogravure and color gravure productions, all kinds of stationery, and specimens of various kinds of paper from wrapping to daintily finished writing paper.

It is a noticeable feature of most of the exhibits that they have an educational or historical atmosphere. A firm of directory publishers features a brochure on the making of directories, and have on show an album containing photographs of the leading journalists of the last century. This exhibit also has an interesting cabinet containing leaves from some of the very earliest London newspapers.

Not far from the Paper trades section, the "Daily News" and "The Star," two well-known London newspapers—morning and evening respectively, have installed a Linotype machine to give visitors some idea of at least one process involved in the production of the newspapers they read. A further attraction to this exhibit is a notice informing passers-by that by filling in the forms provided they may have their names printed in the next edition of either the "News" or "Star," as being among that day's visitors to the British Empire Exhibition. If the number of people taking advantage of this offer is any augury of success, the circulation of these papers should go up by leaps and bounds as a result of this novel form of publicity. There is also exposed at this stall an original letter from Charles Dickens, who was founder and first editor of the "Daily News" in 1846.

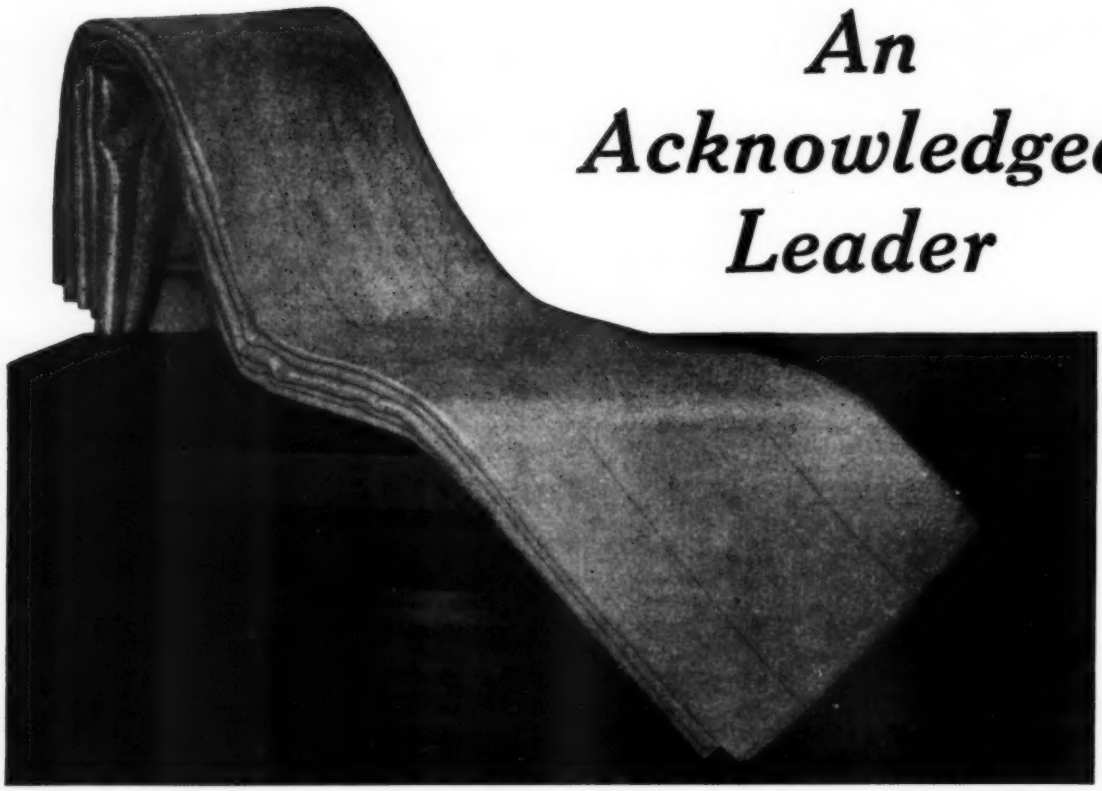
The largest firm of wholesale and retail booksellers and news agents in the country (W. H. Smith & Son) have a very attractive exhibit arranged in a central position which permits of all sides of their kiosk being used for display purposes. Here they have arranged several specimens of beautiful book productions, representative of the best in both paper and print. Among them is a work by Geoffrey Chaucer—the fourteenth century writer—known as the "Father of English Poetry."

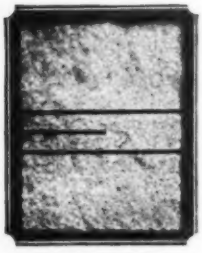
One firm specializing in the production of blotting paper have a very interesting stand showing blotting and filter paper in various stages of construction and examples illustrating the many uses to which they may be put. Spicers—a leading firm of paper manufacturers—have a good show of their various specimens and qualities of paper and stationery.

The Canadian Exhibit

To get a real idea of the scope and value of paper in the service of commerce one has to visit the Canadian pavilion at Wembley. Here one sees a truly wonderful display illustrative of the sources of paper production, the extent of the

An Acknowledged Leader





Hamilton Felts are marked by two blue lines full width of the felt and one shorter blue line midway between them.

IT IS probable that no plate press felt in America is made in such quantity or used for so many purposes in so many mills as the Hamilton A Plate Press Felt shown in the photograph.

This felt has a very wide range of usefulness. It is used for bond, book, writing, ledger, glassine paper and for certain board finishes.

In the quality of the finish it imparts to the paper, and the length and dependability of the service it yields the Hamilton A Plate Press Felt has a record that has never been approached by any other felt on the market.

Paper makers have always appreciated the economy of buying the best possible felts. For felt costs are nothing compared to cost of shut downs, lost production and trouble.

You can count on A Plate Hamilton Press Felt removing any press felt troubles—wherever you can use it. And its range of application is unusually wide.

This is the finest product of our three generations of experience and our complete and modern facilities.

Hamilton Felts are made for every requirement of the paper maker.

Let our service men assist you in removing your felt troubles.

SHULER & BENNINGHOFEN, Hamilton, Ohio

Miami Woolen Mills—Founded 1858

Hamilton Felts

supply, the amount of the production, and the multiplicity of purposes to which paper may be put.

Ten "shop-windows" have been arranged to feature the many interesting departments of the Pulp and Paper Industry of Canada. A really instructive exhibit is this one of Canada's, and they have introduced a very attractive method of forcing paper trade statistics on the minds of those interested. Logs of pulpwood in graduating sizes show the figures of production from the year 1913 to 1922—the smallest log being 1913, with the production figures of 1,115,000 tons, and the tallest log representing 1922 with the figure of 2,800,000 tons, showing that the output has been doubled in less than ten years.

Each of the window displays have been arranged by a firm of paper makers, or a number of them in co-operation, and the various exhibits show pulp in all stages of manufacture and the variety of finished products into which it can be made. All kinds of pulp, paper, boards, envelopes, bags, boxes, and even articles of personal adornment for ladies are shown to demonstrate the large and increasingly valuable uses of wood pulp in industry.

At the back of one window is a large map of Canada, and on each spot where an important paper mill is functioning a picture of the mill has been introduced. By means of electric lighting at the back these pictures have been illuminated, thus making a very forceful and attractive demonstration.

The presence of rough logs of pulp wood of various sizes drives home to visitors from all parts of the world the fact that Canada's resources are as yet only tapped and that this great and flourishing country can go on supplying when many other sources of production are exhausted. And then, as though to prove the miracle of modern industry, one sees behind these logs a collection of newspaper title pages, arranged in a circle in such a way as to make the name of each paper easily discernible. One observes that many of them bear the name of large towns in the United States, and one realizes that Canada is helping to feed, not only the printing presses of the British Empire, but also those of the great country whose near neighbor she is.

British and American business men will not visit this particular section of the Canadian pavilion without carrying away in their minds a very lasting impression of Canada's pulp resources, and of the many different articles which can be manufactured from this invaluable product.

From the Canadian Pavilion five minutes' walk brings one to the Newfoundland Building on the eastern side of the Exhibition ground. Here again the paper enthusiast finds that pulp and paper production, which is now one of the great industries of the island, is well represented. It is possible to see every process, from the wood to the pulp, and from the pulp to the white newsprint.

A large scale relief map and model featuring the territory over which the hydro-electric power development of the Humber River will operate appears in one corner of the Newfoundland building. This hydro-electric force will be used primarily to operate a large pulp and paper mill, and its application to the manufacture of paper is shown by models placed on the map. A paper mill in facsimile has been erected on the map, and in the vicinity may be seen model forests, which supply the wood from which the pulp is produced. Dotted down the length of the river are miniature logs which are being floated down the river to the mill to be turned into pulp and, eventually, into paper, a great deal of which is used for the London "dailies."

Newfoundland has done well in following Canada's example, by introducing specimens of raw materials and finished products; and the excellent relief map serves its purpose admirably. The business man who has been in the habit of lumping Newfoundland with Canada in his geographical records, realizes, after a visit to this pavilion, that she has wonderful resources of her own, and is a thriving country of a size very little smaller than England.

After a close inspection of the British, the Canadian, and the Newfoundland paper exhibits one leaves Wembley with a feeling of curiosity as to what the world would be like without paper, and a strong sympathy for the ancients who had, by dint of much labor, to chip their literary efforts out in solid rock.

A Gentleman

The word "gentleman" is defined in this way: A man who is clean both outside and inside; who neither looks up to the rich nor down to the poor; who can lose without squealing and win without bragging; who is considerate of women, children and old people; who is too brave to lie, too generous to cheat, and who takes his share of the world and lets other people have theirs.—Anon.

Heat Problems in a Sulphite Mill*

By A. H. LUNDBERG
G. D. Jenssen Co.

THE elimination of waste around pulp and paper mills is at present rather actual. In trying to decide on a subject for this paper, I got an idea that a few new things in line of steamsaving would not be out of place.

This subject is, however, so broad that I shall limit myself to the actual steam consumption for cooking, bleaching and drying of sulphite pulp and the possibilities of savings.

I. The Cooking Process

We will first consider the cooking process.

The manufacture of sulphite pulp is as known based on the dissolving of the noncellulose matter in the wood. The wood is barked, chipped, screened and filled in the digester, where it is treated with a solution of calcium bisulphite and free sulphurous acid under pressure at a temperature, which is slowly increased to 135-150° C. or 275-302° F. all depending on the method used and the cooking time desired. Under this treatment the incrusting matter and also a small part of the cellulose itself goes over in the waste liquor.

Thus the cooking process is simply a transformation of the incrusting matter in the wood to a water soluble organic substance. This is done through a combination of the incrusting matter with the sulphurous acid to an organic acid for which Dr. Klason gives the formula

$$R\text{-}SO_2\text{-}OH$$

where R is the organic matter. These organic acids are very strong and have to be neutralized to prevent the cook from spoiling. This is the reason for the presence of the base, calcium or magnesium, in the cooking acid, through which soluble salts are formed.

The temperature of reaction is around 100° C.-212° F. Below this temperature hardly any reactions take place.

Three distinctly different methods are used for the manufacture of sulphite pulp at the present time:

1. Mitscherlich Method.
2. Ritter Kellner Method.
3. Quick Cook Method.

By the Mitscherlich or the indirect method the digestant is heated indirectly, that is the steam is carried through coils in the bottom of the digester, differing from the Ritter Kellner or the direct method, where the steam enters the digester coming in direct contact with the digestant. Otherwise the two methods are similar, both in the preliminary steaming of the chips (Swedish "Basning"), the washing of the pulp in the digester and emptying of the digester contents by dumping.

The Quick Cook method is the American modification of the Ritter Kellner method. Here the time wasting steaming of the chips and draining off the waste liquor before the emptying of the digesters is eliminated, and the digester content is blown at a relative high pressure direct into the blowpit.

As Mr. Genberg has given a very clear description of the different methods of cooking in a paper presented at the last April convention in New York, I do not need to go into any further details of the different methods, but refer to his paper.

As the cooking reactions do not take place before a temperature of 100° C. is reached, we understand that it is very important to reach this point as fast as possible with the lowest loss of SO_2-gas. On the other hand we cannot go too fast to this point on account of purely mechanical reasons, that is: poor penetration of the chips, too hard pull on the boiler house, possible boring of the digester content and other reasons. Just the same, time spent for reaching 100° C. must be considered as lost.

After reaching the reaction temperature we can however go more slowly and many mills are at this point shutting in their digesters for 1-2 hours. The steam is thereafter turned on again and the cook finished as desired.

In steaming a sulphite digester, it does not matter which method is employed, the pressure is climbing much faster than that corresponding to the temperature. The reason for this is that the acid solution by heating liberates SO_2 gas, which creates a gas pressure. Therefore, to be able to hold the pressure at a desired point, we must relieve the digester and this relieving has to be continued throughout the cooking process, starting as soon as the pressure is reached.

This relief: gas, steam and liquor is cooled in specially constructed coolers to a suitable temperature and is later absorbed in the raw acid. The cooling of the relief should be regulated

*Presented at the Meeting of the Chemical Pulp Division of the Superintendents' Association, held at the Manchester Hotel, Middletown, O., during the Fifth Annual Convention, May 23, 1924.

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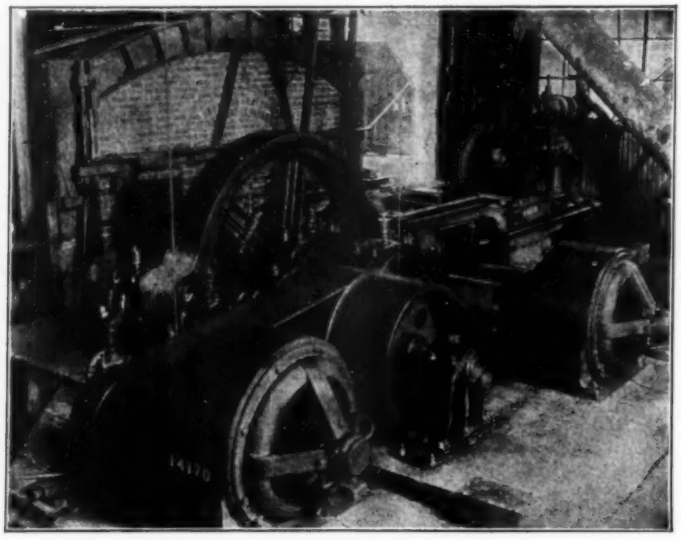

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so that the temperature of the reclaimed acid is kept uniform and at a desired point not higher than max. 40° C., as above this point the acid cannot absorb the desired quantity of SO_2. The most common temperature of the reclaimed acid is 30-35° C. eq. 86-95° F.

The following is a heat balance of a sulphite cook put up according to Mr. G. Sundblad, Sandarna, Sweden.

Data:

Acid pumped 2400 gallons.

Sp. heat and gravity of acid considered the same as for water.

Raw acid temperature	62° F.
Cooking acid temperature	86° F.
Moisture in chips	33%
Temperature of chips	302° F.
Max. cooking temperature	302° F.
Main steam pressure	120 lbs.
Yield of wood	45%
Average tem. of relief	280° F.

Heat retained in digester shell and lining is considered to remain the same from cook to cook.

Calculation of Steam Consumption per A. D. Ton of Sulphite

		Temp.	Water Equiv.
Wood D. B.	4000 lbs.	32° F.	2000 lbs.
Moist. in chips	2000 lbs.	32° F.	2000 lbs.
Acid	20000 lbs.	86° F.	20000 lbs.

Lbs. Steam equal

$$\frac{400 \times (302-32) \text{ plus } 20000 \times (302-86)}{1189-271}$$

equals 5900 lbs. per ton A. D. Pulp.

Heat Balance

(Applied Heat)		
Acid 20000 lbs. 86° F.	1,080,000	B.T.U.
Steam 5900 lbs. 120 lbs.	7,020,000	B.T.U.
	8,100,000	B.T.U.
(Used Heat)		
In relief		
1. For heating 15000 lbs. raw acid.	630,000	
2. Loss in relief cooler	636,000	
	1,266,000	B.T.U.
In Blowpit		
3. Loss in Vomit Stack	2,061,000	
4. Loss in waste liquor pulp	4,662,000	
	6,723,000	B.T.U.
5. Loss in Radiation	111,000	B.T.U.
	8,100,000	B.T.U.

Figures derived from:

1+2=5000 x 248=1,240,000		
1 —15000 x 30 + 5000X =20000 x 54		
1 —5000X = 1,240,000—630,000=610,000	630,000	B.T.U.
2 =610,000 + 26,000 for relieved SO_2 gas.	636,000	B.T.U.
3+4=24,900 x 270=6,732,000		
3 =Later explained	2,061,000	B.T.U.
4 =6,732,000 — 2,061,000	4,662,000	B.T.U.
5 =1.5 B.T.U. per hour, per degree, per sq. ft. digester surface	111,000	B.T.U.

The steam consumption under these conditions should therefore be 5900 lbs. per ton of pulp. We find, however, that the amount of steam necessary for cooking sulphite pulp, far from being a fixed quantity varies considerably in different mills from a maximum of 10-12000 lbs. down to 6000 lbs. per ton.

The question then rises, what factors influence the steam consumption.

These factors are:

A. Temperature of the Cooking Acid.
B. Moisture in chips.
C. Temperature of chips.
D. Yield of pulp.
E. Temperature of steam and its general quality.
F. Method of cooking control.

We will now consider each of these factors separately.

A. Temperature of Cooking Acid

If by neglect the temperature of the cooking acid should drop from 86° F. to 76° F. the difference in heat units for bringing the same amount of acid up to the final temperature of 302° F. would be

$$20000 \times (86-76) \text{ equals } 200{,}000 \text{ B.T.U.}$$

eq. 218 lbs. of steam per ton.

As the reclaimed acid can be kept at 96° F. without any trouble, we see how easy a superintendent can effect a saving of ca. 450 lbs. of steam per ton over another fellow that neglects to turn off a little cooling water when the weather is getting colder.

It is however not only steam he is saving. Every sulphite superintendent has certainly noticed some trouble with his pulp at the beginning of cold weather. In looking for the trouble he will find ninety-nine times out of a hundred, that the low temperature of the cooking acid is to blame. Low temperature of the cooking acid means more steam, more relief, weaker acid, etc.

B. Moisture in the Chips

Some steam saving can also be effected by using drier wood. The saving between 50% and 30% moisture content in the wood amounts to 2286 lbs. of water to be raised (302-32)° F. equal to ca. 675 lbs. of steam per ton of pulp. The mills have however very seldom any way to regulate the moisture content in the wood, and an expensive yard for seasoning of the wood is out of the question.

C. Temperature of the Chips

The temperature of the chips will also influence the steam consumption, but in much lesser degree than the cooking acid, supposing that the chips are not frozen, in which case the increase in steam consumption is considerable.

For melting 2000 lbs. of ice there is required

$$\frac{2000 \times 144}{918}$$

equals 314 lbs. of steam.

and if the moisture content in the wood is 50%, we would need ca. 700 lbs. of steam per ton of A.D. pulp only for melting the ice. If this has to be done in the digester itself, we can readily understand the troubles this can cause in the cooking process.

It is therefore very important to have a hot pond in the wood room during the winter time, when the logs are frozen.

Heat for the hot pond can easily be found in secondary steam, exhaust steam or from other sources to be mentioned below.

D. Yield of Pulp

The influence of the yield on the steam consumption is easily understood.

To secure a maximum yield per digester space, the digester should be filled to the top, if not packed with chips. One of the reasons for lower yield per cubic foot digester space against the other side is, that we are careless with the filling of the digester. The old story about not getting circulation if the digester is too full, doesn't go any longer. If the circulation is poor, we have to look for the reason somewhere else, probably too small steam pipe entering the digester causing too high velocity of the steam.

By steaming the chips the European mills are gaining 10-20% higher yield per cubic foot digester space. Why cannot we do something similar?

No time should be lost if the steam is turned on during the filling with chips, and we should get a better packing of the chips and consequently higher yield per digester space, less acid and less steam per ton sulphite and a better penetration of the chips.

E. Temperature of Steam and Its General Quality

The quality of the steam has also something to do with the steam consumption. Wet steam increases the steam consumption in proportion to its percentage of moisture. The advantage of using superheated steam is, that the steam is always dry, 10-15 degrees superheat is however sufficient. Otherwise the steam consumption decreases in proportion to the temperature of the steam.

From the above can be seen how important it is to keep a steady uniform steam pressure in the boiler house. To help the boiler house the digesters should be carefully spaced, and even then a heavy pull of steam takes place every time a digester is brought up to pressure.

A great help to the boiler house in this respect is a steam accumulator, which acts the same way as a flywheel on a steam engine, absorbing energy during the low load period and then giving up again varying quantities of steam during the high load period. The heat accumulator is suitable in all places, where the steam demand is subject to more or less variations and permits absolute uniform operation of the boilers with a high efficiency. The best known steam ac-

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cumulator is the Ruths manufactured by the Aktiebolaget Vaporackumulator, Stockholm, Sweden. A number of these accumulators are installed in America and Canada and reported to effect a saving of 15-20% of the fuel.

About the same results are obtained by the use of the Decker Process, which I shall describe later. Here the digesters themselves are acting as accumulators of heat, as the heat is circulating in the process and less steam is needed in the early part of the cook, thus reducing the peak loads to a minimum.

F. Method of Cooking Control

Of equal importance to the factors already above mentioned is the handling of the digester itself. I have, in an earlier paper, "Help of Steam Flowmeters in the Sulphite Cooking Process," pointed out the importance of uniform steaming and relieving of the digester. I made the statement, that with the help of individual flowmeters on the digesters the steam consumption can be lowered in most mills 5-10% by controlling the steamflow to the digesters. There is also in many mills a direct waste of steam after blowing, which amounts to thousands of pounds to no use whatever.

Discussion of the Heat Balance

We will now turn back to our heat balance and see where the heat we have been applying to the digester goes during the cook and after the digester is blown.

Item 1. The first item is for heating 15,000 lbs. of raw acid from 62° F. to 86° F. equal to 630,000 B.T.U. This is the only quantity of heat that is recovered during the cooking process and is always circulating in the system.

Item 2. (Loss in relief coolers 636,000 B.T.U.).

This is under winter conditions. During the summer time this loss is much higher, as the cooking acid cannot be raised above 40° C.

This heat was, before the invention of the Decker process, lost in the sewer.

Mr. Decker has experimented for many years with the utilization of heat in the relief from the digesters. He holds a patent on heating the freshly filled digester with the relief from other digesters by the use of heating coils. This method did not prove as satisfactory as he expected, and he went over to the direct injection of the relief into the digester going up to the pressure—in other words, he used the fresh digester as a reclaiming tank.

The digesters are worked in series with pipe connections allowing one digester to relieve into another.

Below is a time schedule from a three and four digester battery mill showing clearly how the digesters are worked.

When a digester is filled with chips and acid the relief from the other digesters is injected into the bottom of this one, and the temperature and pressure brought up gradually without the use of steam. When the next digester is filled the relief is turned into this one and the first digester is finished with steam in the usual way, the heat from its relief being used in turn to heat some other digester.

From this it will be seen that no reclaiming coolers are needed, and that the whole reclaiming process is simplified as a comparatively weak acid is kept in the storage tank and all loss of sulphur incident to high "Free" and gas leaks are done away with.

In addition to the steam saving experience has shown, that by the use of this cooking process there is an increase in the yield from the wood, also a saving in bleaching powder and chemicals and a material saving in the upkeep of the reclaiming system.

Item 3. (Loss in Vomit Stack).

The digester content when blown into the blowpit is giving off a considerable amount of steam. Figuring

Temp. of liquor at 55 lbs. pr. ..... 302° F.
Temp. of liquor at 0 lbs. pr. ..... 212° F.

Difference ..... 90° F.

22900 x 90 = 2,061.000 B.T.U. are discharged through the vomit stack.

$$\text{or } \frac{2{,}061{,}000}{970} = 2130 \text{ lbs. of steam at atmospheric pressure.}$$

This heat could be utilized some way, and I understand, that it is being done in some mills.

For condensing the steam we need, if assuming water entering at 70° F. and leaving at 180° F.

$$\frac{2{,}061{,}000}{110} = 18750 \text{ lbs. of water} = 2240 \text{ gals. per ton of pulp.}$$

If the digester is being emptied in 15 minutes

$$\frac{2240}{15} = 150 \text{ gallons per min. per ton of pulp.}$$

This hot water could be utilized in the above mentioned hot pond in the woodroom, for bleaching, for washing pulp or in other places.

Item 4. The remaining heat is left in the blowpit and is in most cases wasted when washing the pulp.

Part of the liquor could, however, be drained off before washing the pulp and pumped over to a separate tank, there the heat could be recovered. The most liquor, which can be obtained this way, without special apparatus is stated to be 800-1000 gallons per ton of pulp.

1000 x 8.33 x 180 = 1,500,000 B. T. U.

This heat could also be utilized for heating water, but as a new process for evaporating sulphite liquor has recently been perfected by Mr. Thurholm, and if this process proves to be anywhere nearly as economical as believed, we have at last found a use for our waste liquor, namely, as a fuel.

The fine powdered residue, which remains when the water is evaporated, is stated to be an ideal fuel, containing about 8200 B. T. U. per lb., needs no preparation, has practically no ash, burns at an efficiency of over 86% and can be produced for less than $3.00 per net ton.

If we thus should be able to drain off 1000 gallons of waste liquor per ton pulp equal to 8330 lbs., 36% of the non-cellulose matter in the wood or ca. 750-800 lbs. residue could be recovered per ton sulphite pulp. Having a heat value of 8200 B. T. U., it ought to correspond to about 500 lbs. of 12500 B. T. U. coal and with an evaporation of six would yield at least 4,000 lbs. of steam.

The power for the evaporation could be obtained almost free by putting in a turbine, working with 100 lbs. back pressure, in the main steamline to a digester house.

Item 5. The last item in our heat balance is radiation loss. The radiation is of course much greater in winter time with the bigger temperature difference between the surrounding air and the digester shell than in summer time, and for this reason a little less steam is also used in the summer time.

With a new asbestos covering now in the market the radiation as a whole could be almost eliminated. It is of course understood that all steam pipes and valves have been insulated before.

II. The Bleaching Operation

Our next steam consumer is the bleach plant.

The bleaching operation is purely an oxidizing chemical reaction. When a digester of pulp is blown all substances dissolved in the wood are as before mentioned accompanying the stock in the blowpit. All these substances react freely with the bleach, so it is very important that the stock be thoroughly washed before bleaching. Hot water should preferably be used, particularly at the start, since the impurities, if cold, adhere very strongly to the fibers. Here we have one use for our hot water recovered from the blowoff.

The bleaching operation in itself is very simple and we have a number of different systems. I am, however, not here going to describe any special bleaching apparatus. What we are going to consider instead is the relative heat economy of low and high consistency bleaching.

The low consistency bleaching, 4-6%, is the method most commonly used, but in recent years apparatus able to circulate and bleach consistencies of 20% and more have been put on the market and are gaining considerable interest.

Steam Consumption at Low and High Consistency

Data:	Low Consistency.	High Consistency.
Pulp A. D.	2000 lbs.	2000 lbs.
Water	28700 lbs.	3500 lbs.
Temperature pulp and water	40° F.	40° F.
Bleach liquor	3500 lbs.	3500 lbs.
Temperature bleach liquor	70° F.	70° F.
Max. temperature for bleaching	110° F.	110° F.
Consistency when bleached	5%	20%
Assumed bleach percent	5.25% Cl_2	5.25% Cl_2
Specific heat of pulp	0.4	0.4

Strength of bleach liquor, 30 gr. available Cl_2 per liter.
Radiation losses and chemical heat not figured in.

Steam Consumption at Low Consistency

Pulp	1800 x 70 x .4	50.400 B. T. U.
Water	28700 x 70	2,009.000 B. T. U.
Bleach liquor	3500 x 40	140,000 B. T. U.
		2,199,400 B. T. U.

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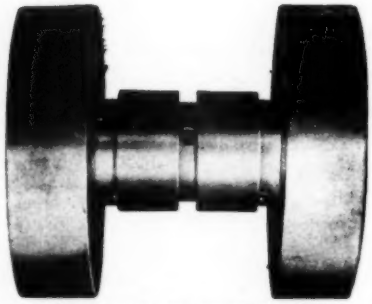

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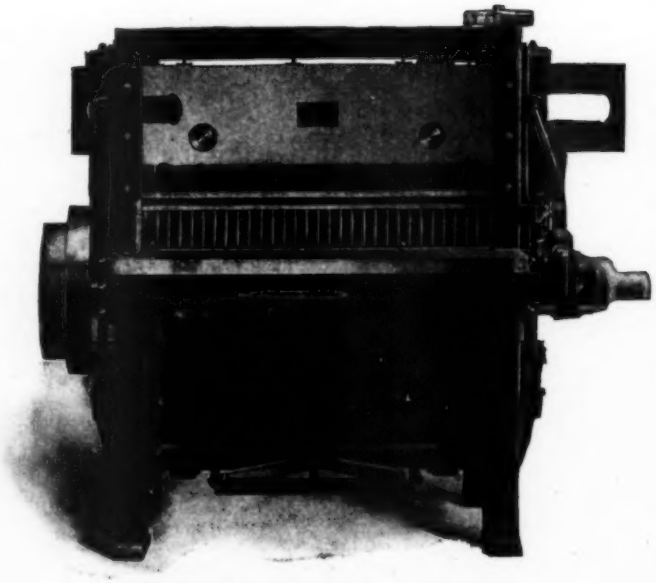

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corresponding to

$$\frac{2{,}199{,}400}{1189\text{-}80} = 1980 \text{ lbs. of steam per ton of pulp if live steam being used.}$$

Steam Consumption at High Consistency

Pulp	1800 x 70 x .4	50,400 B. T. U.
Water	3500 x 70	245,000 B. T. U.
Bleach liquor	3500 x 40	140,000 B. T. U.
		435,000 B. T. U.

corresponding to

$$\frac{435{,}000}{1109} = 392 \text{ lbs. of steam per ton of pulp}$$

Thus a saving in steam of 1588 lbs. per ton pulp in favor of the high consistency bleaching.

Since, however, when bleaching at 5% consistency, it is generally necessary to raise the temperature to 110° F., a temperature not exceeding 85° F. is sufficient at 20-25% consistency. The heat of chemical reaction will also raise the temperature of the pulp 5° F. in the case of the lower consistency against 15° F. in the case of the denser stock. This means that during the warmer portion of the year no live steam is necessary.

For the high consistency bleaching methods is also claimed savings in bleaching powder and less shrinkage, and also that inferior wood will yield a strong exceptionally clean pulp. Its only drawback seems to be increased power consumption.

A considerable saving in steam can also be accomplished with present low consistency bleaching methods, if some of the hot water usually running to waste in a pulp mill is utilized. With utilization of the heat from the vomit stack the bleaching could be carried out without any use of steam, outside of a small amount to take care of radiation losses.

Assuming we have a hot water supply at 180° F. the pulp has to be pressed out to ca. 11-12% and only ca. 16-17000 lbs. eq. to 1900-2000 gallons of hot water per ton A. D. pulp added to eliminate all the steam. This can be seen from the following calculation:

Pulp A. D.	2000 lbs.
Water	13800 lbs.
Temperature water and pulp	40° F.
Bleach liquor	3500 lbs.
Temperature liquor	70° F.
Hot water	16800 lbs.
Temperature hot water	180° F.
Consistency	5%

The finishing temperature equals $1800 \times 8 \times .4 + 13800 \times 8 + 3500 \times 38 + 16800 \times 148 = 3500X$.

X=78 eq. to 110° F.

Thus 16800 lbs. of hot water per ton A. D. pulp is sufficient to raise the temperature of the batch to a desired max. temperature of 110° F.

With installations of wet machines as other means of removing the water from the pulp to 30% B. D. a water supply of much lower temperature can be utilized to the same effect, but of course more water per ton of pulp is necessary.

Pulp A. D.	2000 lbs.
Water	4200 lbs.
Bleach liquor	3500 lbs.
Hot water	26500 lbs.
Consistency	5%

The temperature of the hot water equal to $1800 \times 8 \times .4 + 4200 \times 8 + 3500 \times 38 + 26500X = 35000 \times 78$.

X=96 eq. to 128° F.

Even with a smaller hot water supply available a substantial steam saving can be accomplished.

III. The Drying of Pulp

Our next steam condenser is the drying machine. Here the water is first removed from the continuous pulp web by pressing and thereafter drying. This means that the main point for reducing the steam consumption in drying must be, that the least possible amount of water is left over for evaporation.

Through increased press weight and better constructed machines it is now possible to have the pulp reaching the driers 40% A. D. against 35% on older machines.

More than 40% was, however, not reached before the invention of the Kamyr or feltless, high pressure machine. This machine was invented by a Norwegian engineer, Schaanning, and is now built in U. S. A. and Canada. By a special corrugation of the pressrolls and doctor arrangements the water is carried away from the pulp sheet at the instant it is pressed out by the rolls, yielding a test of 55% A. D.

To reach this result two presses are being used, each of special construction. The pressure is increased from press to press. The first one, which handles comparatively wet pulp, works with a low pressure of 400 lbs. per inch of width, while the second works with a pressure of up to 2000 lbs.

The press is built much like a standard feltpress but much more rigid. It consists of two cast iron rolls of a diameter increasing with the capacity, which run in water cooled bearings of large bearing surface. The pressure can be regulated with a hand wheel and a worm gear, which transmits the pressure through a spring to a system of levers.

The main novelty of the rolls is, that they are supplied with grooves, which make it possible to subject the feltless web of pulp to a heavy pressure without crushing.

The following calculation shows the substantial saving in steam which is made possible by this machine. Although the elimination of press felts makes this machine a big money saver for the pulp mills.

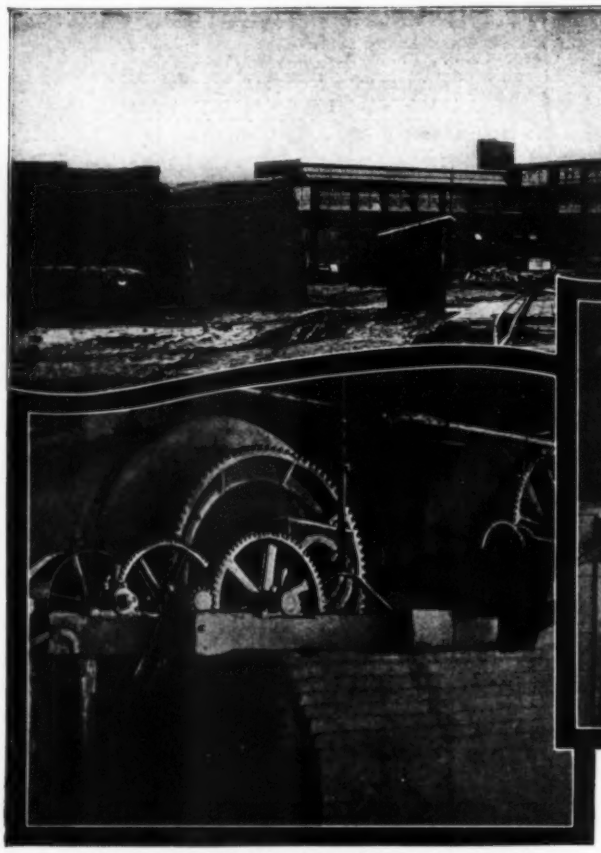
	Old Machine.	Kamyr Machine.
Pulp	2000 lbs. A. D.	2000 lbs. A. D.
Reaching driers	40% A. D.	55% A. D.
Leaving driers	100% A. D.	100% A. D.
Water evaporated	3000 lbs.	1640 lbs.

TIME-SCHEDULE FOR COOKING SULPHITE PULP
USING THE DECKER SYSTEM

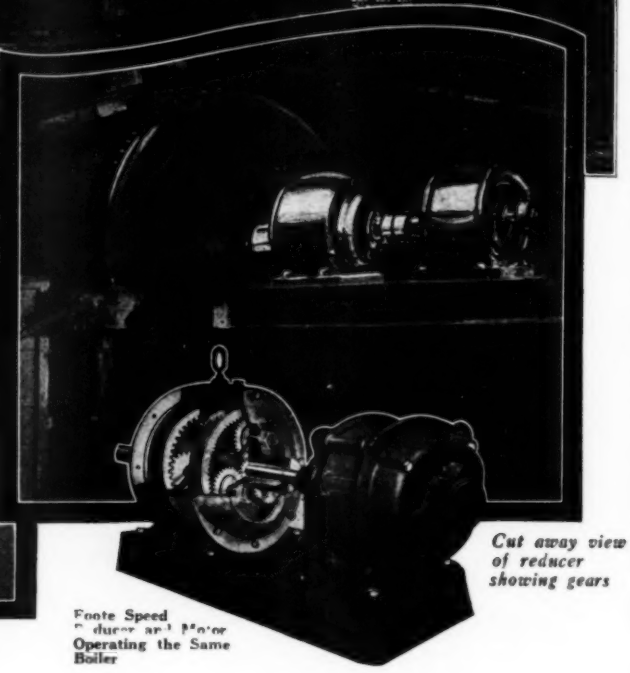
	Applied to 4 digesters		11 hour cycle		2 hrs. 45 min. injection	
Dig. No.	Injection	Time to Pressure	Top-relief	Top-relief or Dig. Shut in	Side-relief	Top Relief
1	12:00- 2:45 PM	2:45- 3:45 PM	3:45- 6:15 PM	6:15- 7:15 PM	7:15- 8:00 PM	8:00-10:00 PM
2	2:45- 5:30 PM	5:30- 6:30 PM	6:30- 9:00 PM	9:00-10:00 PM	10:00-10:45 PM	10:45-12:45 AM
3	5:30- 8:15 PM	8:15- 9:15 PM	9:15-11:45 PM	11:45-12:45 AM	12:45- 1:30 AM	1:30- 3:30 AM
4	8:15-11:00 PM	11:00-12:00 M	12:00- 2:30 AM	2:30- 3:30 AM	3:30- 4:15 AM	4:15- 6:15 AM
1	11:00- 1:45 AM	1:45- 2:45 AM	2:45- 5:15 AM	5:15- 6:15 AM	6:15- 7:00 AM	7:00- 9:00 AM
	Applied to 4 digesters		12 hour cycle		3 hours injection	
1	12:00- 3:00 PM	3:00- 4:00 PM	4:00- 7:00 PM	7:00- 8:00 PM	8:00- 9:00 PM	9:00-11:00 PM
2	3:00- 6:00 PM	6:00- 7:00 PM	7:00-10:00 PM	10:00-11:00 PM	11:00-12:00 M	12:00- 2:00 AM
3	6:00- 9:00 PM	9:00-10:00 PM	10:00- 1:00 AM	1:00- 2:00 AM	2:00- 3:00 AM	3:00- 5:00 AM
4	9:00-12:00 M	12:00- 1:00 AM	1:00- 4:00 AM	4:00- 5:00 AM	5:00- 6:00 AM	6:00- 8:00 AM
1	12:00- 3:00 AM	3:00- 4:00 AM	4:00- 7:00 AM	7:00- 8:00 AM	8:00- 9:00 AM	9:00-11:00 AM

TIME-SCHEDULE FOR COOKING SULPHITE PULP
USING THE DECKER SYSTEM

	Applied to 3 digesters		11 hour cycle		2 hrs. 40 min. injection	
Dig. No.	Injection	Time to Pressure	Top-relief	Digester shut in	Side-relief	Top-relief
1	12:00- 2:40 PM	2:40- 3:40 PM	3:40- 6:20 PM	6:20- 7:20 PM	7:20- 8:20 PM	8:00-10:00 PM
2	3:40- 6:20 PM	6:20- 7:20 PM	7:20-10:00 PM	10:00-11:00 PM	11:00-11:40 PM	11:40- 1:40 AM
3	7:20-10:00 PM	10:00-11:00 PM	11:00- 1:40 AM	1:40- 2:40 AM	2:40- 3:20 AM	3:20- 5:20 AM
1	11:00- 1:40 AM	1:40- 2:40 AM	2:40- 5:20 AM	5:20- 6:20 AM	6:20- 7:00 AM	7:00- 9:00 AM
2	2:40- 5:20 AM	5:20- 6:20 AM	6:20- 9:00 AM	9:00-10:00 AM	10:00-10:40 AM	10:40-12:40 PM
	Applied to 3 digesters		12 hour cycle		3 hours injection	
1	12:00- 3:00 PM	3:00- 4:00 PM	4:00- 7:00 PM	7:00- 8:00 PM	8:00- 9:00 PM	9:00-11:00 PM
2	4:00- 7:00 PM	7:00- 8:00 PM	8:00-11:00 PM	11:00-12:00 M	12:00- 1:00 AM	1:00- 3:00 AM
3	8:00-11:00 PM	11:00-12:00 M	12:00- 3:00 AM	3:00- 4:00 AM	4:00- 5:00 AM	5:00- 7:00 AM
1	12:00- 3:00 AM	3:00- 4:00 AM	4:00- 7:00 AM	7:00- 8:00 AM	8:00- 9:00 AM	9:00-11:00 AM
2	4:00- 7:00 AM	7:00- 8:00 AM	8:00-11:00 AM	11:00-12:00 N	12:00- 1:00 PM	1:00- 3:00 PM



A Rotary Boiler, Containing Waste Paper Stock, Operated Through Series of Gears



Foote Speed Reducer and Motor Operating the Same Boiler

Cut away view of reducer showing gears

Your Equipment Needs This

Wherever a reduction in motor speed of 3 to 1 or more is necessary Foote Speed Reducers will do the work at a saving in installation cost, operation cost, maintenance cost, replacement cost, and power cost.

Foote Speed Reducers replace open equipment such as belts, chains, ropes, open gearing, etc. Because they are entirely enclosed with all moving parts running in oil, they deliver from 86 to 94% of the motor power, provide positive safety to workers, and give uninterrupted service.

They are ideal for use on storage tanks, mixers, conveyors, and other paper mill equipment.

Tell us about your equipment and let our engineers show you why you need Foote Speed Reducers.

MEMBER OF AGMA

FOOTE BROS. GEAR & MACHINE COMPANY

Manufacturers of Rawhide and Bakelite Pinions and Cut Gears of All Kinds.
Send for Catalog.

250-260 N. Curtis St. **Chicago, Ill.**

J. R. Shays, Jr., 100 Grennwich St., New York City
King & Knight, Underwood Bldg., San Francisco, Calif.

Steam necessary.....	5400 lbs.	2950 lbs.

A saving in steam of 2450 lbs. per ton of A. D. pulp.

In order to carry away the vapor from the machine a certain amount of air must be allowed to pass out with it. The amount of air that must pass through the machine room is dependent on the amount of water that is to be carried out, the temperature at which the mixture of air and vapor will be carried out, and the per centage of saturation of the mixed vapor and air. With these factors determined it is a simple matter to figure out the cubic feet of air per minute that will have to pass through the machine room. To be able to better regulate the air supply the drying machine should be built so that the driers are either isolated with partition walls, or so that the whole drying end is built in a separate closed room. Also a hood over the machine is some help in this respect.

The air, however, must be heated and the heat for this purpose is largely obtained through radiation from the machine. Temperature of outgoing air and vapor has been found to be as high as 125° F. and is in most cases going to waste.

The vapor can, however, be condensed back into water and its latent heat recovered. This is being done in the Briner economizer, which is now being installed both in paper and pulp mills.

The Briner economizer is a device consisting of a series of chambers or channels separated by thin metal sheets. The hot vapor from the machine passes through one series of these channels and the cold air supply for the machine room is drawn through the alternating channels. This cold air absorbs the heat transmitted through the metal plates and is passed along into the machine room, consequently no steam is necessary for heating. It is reported that practically 1000 B. T. U. is secured when condensing one pound of vapor in the exhaust air, and it has been found that by cooling the exhaust air only 25° we will get an increase in temperature of 85° in the cold air entering. This is due to the condensation of the vapor in the outgoing air.

It is especially during the cold winter months that full benefit is derived from it, as the saving due to the use of the Briner economizer increases very rapidly as the outside temperature drops, making a greater difference between the air temperature and the vapor temperature.

The condensate from the driers could also be used for preheating the air. If this condensate was utilized down to 160° F. the temperature of the necessary air ought at least be raised ca. 35° F.

This condensate should thereafter at 160° F. be used as feed water make up.

Summary

It is clear that if improvements as suggested above are put into effect in sulphite mills, the present waste of ca. 7,500,000 heat units per ton of pulp in the cooking process can at least partly be eliminated or utilized.

A modern sulphite mill should be able to get along with	
For Cooking	4000 lbs. of steam
Bleaching	0000 lbs. of steam
Drying	3000 lbs. of steam
Heating, etc.	1000 lbs. of steam
Total	8000 lbs. of steam
Against what is customary at the present time:	
For Cooking.....	6000-7000 lbs. of steam
Bleaching	2000-2500 lbs. of steam
Drying	5500-6000 lbs. of steam
Heating, etc	1000-1500 lbs. of steam
	14500-17000 lbs. of steam

Thus a saving of at least 6500 lbs. of steam per ton A. D. pulp is possible.

With a price of 50c per 1000 lbs. of steam, it would correspond to a saving of $3.25 per ton in steam only.

With the sulphite fuel plant connected to the mill for utilization of sulphite waste liquor, 4000 lbs. of steam per ton of pulp could be obtained from this source, or sufficient to take care of the cooking process, considering steam consumption.

For the remaining 4000 lbs. of steam fuel has to be taken from other sources. If coal with an evaporization of 8 is used the coal bill would be reduced to 0.25 tons of coal per ton of A. D. pulp.

In the final report of the Committee on Waste in the Industry it is stated that bark containing 50% moisture has a net heat value of ca. 3500 B. T. U. per pound of moist bark, making one pound of bark equivalent to 0.27 lbs. of coal with a heating value of 13,000 B. T. U. per pound.

Consequently, with proper arrangements for drying and burning of bark and other wood we see our way clear to a future sulphite mill with the coal bill entirely eliminated.

Press Felts*

By F. W. VICKERY
O. B. E., M. I. Mech. E.

PRESS Felts of a paper-making machine perform very important functions in the art of paper-making—functions which ought to be carried out with precision and certainty. Indeed, any departure from such a standard must involve loss of quality and quantity and result in trouble and waste. But, while the requirements are known, and have been known for many years, it has not been found possible to produce a felt that will perform these functions in a constant manner: a felt in which some of its characteristics do not change during its working life.

It may be accepted as a fact that a felt has never yet been made that will give the same results during all the stages of its life. What is the reason? Is it because of lack of enterprise and research on the part of felt makers? Most assuredly this is not the case. Present-day conditions, when felts are made in many different countries and competition is more or less international, are alone sufficient justification to the felt-maker to strive his utmost to produce a felt to meet the needs. What, then, is the reason? It is that there is no material known which, when used in the manufacture of felts, will make the felt capable of performing the various functions necessary. The very nature of the work to be done limits the class of material which must be used in a felt. Up to now, no better material than wool has been discovered, but, nevertheless, wool deteriorates, or changes its character, during the performance of its duties and so is unable to do its work with certainty. More, in fact, is being asked from a felt than the material from which it is made can supply.

Of the many changes that take place in a felt during its life, perhaps the most important is Porosity. In the past, the opinion generally held has been that porosity has been affected through foreign matter working into the pores of the felt, so closing them up and preventing the passage of water. The change is not due to this cause, however. The first link in the chain of deterioration by which porosity is affected, is the destruction of the elasticity or resiliency of the threads of the felt. Instead of remaining loose and porous, they become flat and hard after passing through the presses. Doubtless it will be appreciated that much of the water removed at the presses does not pass directly through the pores of the felt. The water cannot be removed in a direct line with the pressure removing it, for to obtain the required pressure there must be a member on each side. Consequently, an appreciable quantity of the water has to penetrate the threads of the felt. At the rolls a channel formation is assumed by the water and until the water passes out of this channel, the threads and not the pores of the felt are the chief draining agents. Thus, the consideration of importance is not that the pores shall be open, but that the threads shall be resilient, loose and porous. If a felt can be kept with the threads in this condition, dirt does not cause trouble. Only when the threads have lost their resiliency does dirt have to be taken into account.

A machine has now been developed which enables the felt—incapable itself of doing so—to remain constant. Broadly, the theory upon which this machine operates is that a continuous agency is necessary to counteract the influences by which the elasticity of the felt is lost and so assist the felt to recover from these influences.

It may help to a quick grasp of the idea if some of the principles governing materials of a resilient character are mentioned, for felts come under this class. All such materials have a limit of elasticity and a period of recovery which vary with each class. By limit of elasticity is mean the point to which the material can be stretched, compressed, or otherwise distorted without losing its power to return to its original shape. By period of recovery is meant the time necessary for it to return to its normal condition.

If distorted beyond its limit of elasticity, it will never return to its original shape. The extent to which it falls short of doing so, depends upon the distance it has been distorted beyond its elastic limit. Wool has a low limit of elasticity.

All resilient materials require a period for recovery from distortion. The time varies according to the extent of distortion and, of course, each class of materials has its own peculiar recovery period. Wool is relatively slow to recover its elasticity.

In what way do these principles affect paper making felts? First, the threads of the felt are distorted by passing through

*Presented by Thos. H. Savery, Jr., at the meeting of the Book and Fine Writing Paper Division of the Supts.' Assn., held at the Sorg Paper Co., Middletown, O., during the Fifth Annual Convention, May 23, 1924.

Specialization

—In the Light of Overall Knowledge

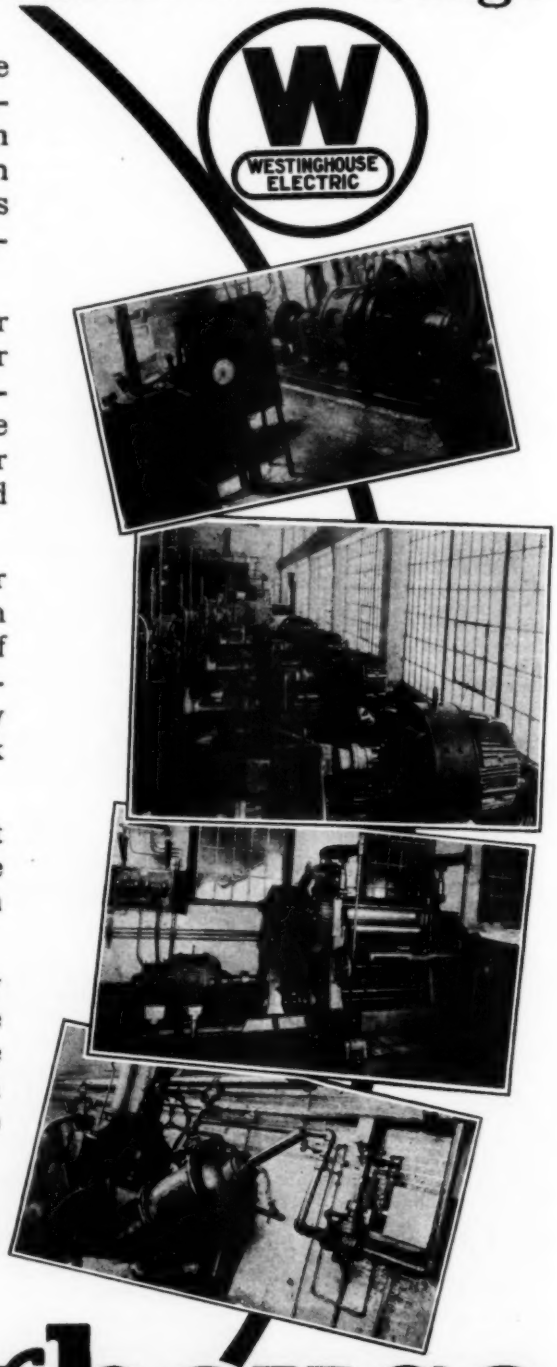
The specialist in many lines, with a large co-ordinated engineering organization, possesses a store of overall knowledge which guides him in the design and construction of related equipment. Such knowledge is not possessed by the single line manufacturer.

Physically, the two are not unlike. Their chief difference lies in the range of their organizations. One has a small organization to cope with a single problem—the other an engineering organization, larger in proportion, handling many related problems.

WESTINGHOUSE, being of the latter type, has many departments, each of which is comparable to the whole organization of the single line specialist. These departments work independently, yet they closely cooperate, exchange knowledge, and work jointly on related applications.

In any industry where power equipment is employed, the overall knowledge of the Westinghouse Engineering Organization has many advantages to offer.

Pulp and paper is only one of the many industries which have benefited by these large co-ordinated engineering forces, the manifest advantages of which constitute a guarantee and protection that no single line specialist can hope to offer.



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the presses. This distortion is one of compression, which has a flattening effect on the threads, and as the distortion is beyond the limit of elasticity there is a permanent set; or, in other words, some of the elasticity is permanently lost in so far as concerns the power of the felt to recover.

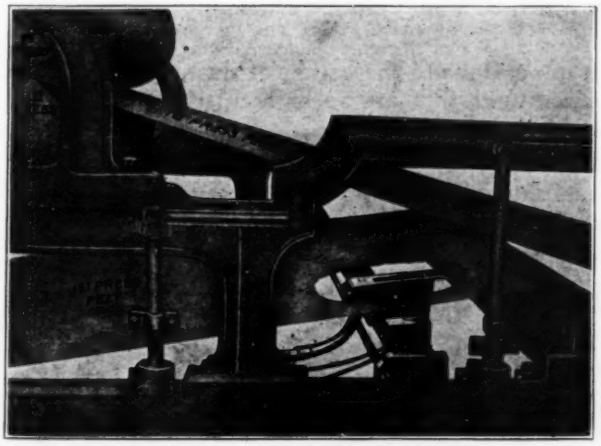
Secondly, the time of recovery for wool is longer than the periodicity of the passage of the same spot through the presses. Consequently there is very little recovery possible between the repeated distortions. This condition is made worse by the fact that the felt is under tension the whole time and in that state passes round, or partly round, felt rolls between the time of passing through the presses.

The threads, therefore, remain in the same position relative to each other and pass through the presses again and again in exactly the same plane until the threads are flattened, spreading out into the pores. At this stage dirt begins to play a part and spots become impervious mats, making the drying uneven; and wrinkles, cockles and soft spots occur.

Conditioning the Felt

So long as paper is made by the present method, it is impossible to prevent this distortion. The remedy, therefore, lies in the recovery of the felt's elasticity by an outside agency. To provide such an agency was the problem the writer set himself. His experiences, while finding a solution were both interesting and instructive, but it will suffice to say that the machine has been amply proved to be capable of maintaining constancy in the felt. The proof is that in two years upwards of three hundred of these machines have been sold and that over eight percent have been repeat orders—surely a safe standard by which to judge. One firm has no fewer than twenty; another fourteen; several eight; while seven mills have equipped all their paper machines. Fifteen countries have installations working or in hand. All repeat orders have resulted from original trial installations.

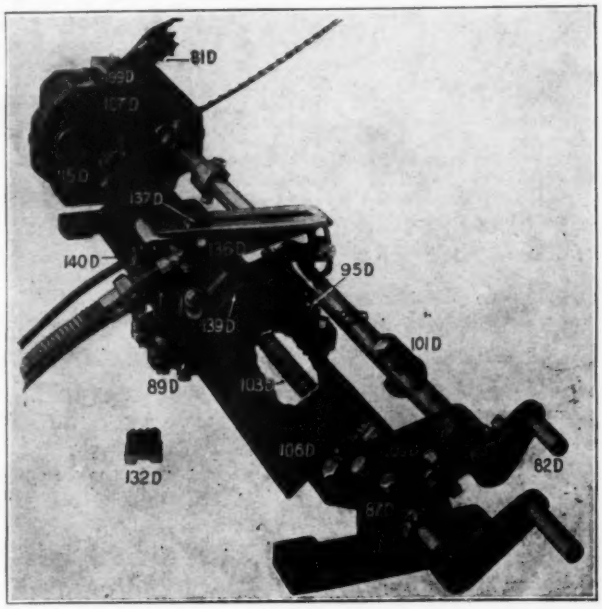
To revert to the operation of the machine, elasticity is maintained by causing the threads of the felt slightly to twist or roll relative to each other. This is achieved by forcing a fluid in contact with two sides of the thread, the travel of the fluid on each side being in opposite directions. The movement imparted to the thread ensures that the nip of the press rolls and the pressure of the felt rolls is not always exerted on the same part of the thread so that the flattening effect is only temporary and can never be turned into a permanent set, so the shape and elasticity of the thread is maintained. Sufficient information will now be given to enable the operation of the machines to be understood. First, please bear in mind that only a small proportion of the total width of the felt is operated upon at one time, namely—a strip of about three-quarters of an inch. In the original machine, nozzles were employed in pairs one on the face side of the felt pointing towards the inside and one on the inside pointing towards the face. These were spaced so that the fluid streams would just pass each other without interfering. As the felt threads



The conditioner is here shown applied to a paper machine

passed between the nozzles by reason of the rotation of the felt, there was a period when each thread was acted upon by the two streams—one on either side of the thread—and the thread was twisted the required distance by this operation.

Two pairs of nozzles were provided, one pair for the cross of weft threads—whose action I have explained—the second pair, for the warp or length-way thread. Movement was imparted to these nozzles to bring all warp threads of the felt under their action. The fluid used was highly compressed air. The present construction is entirely different to the original conception, although the principle of operation is the same. The only reason for mentioning the original design



This illustration shows a complete Conditioner (as the machine is named) as now made

is that the operation of these spaced nozzles can be more easily grasped than can the operation of the mechanism used in the present construction.

Water is now used as the actuating fluid instead of compressed air—a much more convenient method in the majority of mills. This water is forced by pressure through the felt from the face and return by suction; the suction taking the place of the nozzle which was originally inside the felt. The two forces—that is, the water pressure and the suction—are caused to operate in such close proximity that streams of water pass each side of the threads exactly in the same manner as streams of air passed from the nozzles.

One of the illustrations shows the Conditioner (as the machine is named) applied to a paper machine, while the other illustrates a complete Conditioner as now made.

The bearings 119D are fixed one on each side of the paper machine in any convenient position.

Journalled in these bearings is the Vee Slide 106D. Slideably mounted thereon is the Conditioning Box 136D. This Box passes continuously back and forth from one side of the paper machine to the other. Its movement including the reversing action, is entirely automatic. It is an engagement with the screw 103D which revolves first in one direction and then in the other. The mechanism operating the screw is entirely enclosed in the gear box 107 and 115 and is lubricated from an oil bath. Motion is imparted to the mechanism in the gear box by chain, preferably from the bottom press roll shaft.

The felt passes over the top of the Conditioning Box traveling from left to right when looking at the illustration of the complete Conditioner.

137D is an island standing in a suction chamber. From this island, water is ejected with considerable force from a nozzle of peculiar formation.

The felt will endeavor to move away from this force of water but is prevented from doing so by atmospheric pressure acting upon the opposite side of the felt immediately over the suction space surrounding the island.

By properly balancing the water pressure, acting in an upward direction, against the atmospheric pressure acting in a downward direction, the threads of the felt within the space occupied by the island are stretched. This action plays some part in the maintaining of elasticity.

Something like sixty percent of the water ejected from the nozzle passes completely through the felt, the remaining quantity acting upon the face of the threads. The nozzle is located a given distance from the edge of the island so that the suction can operate upon the water immediately it has passed through the felt. By this means the water is made

Speed Reducing Transmissions

Their Place in Industry

WHEREVER electricity is employed as motive power, there is an application for James Speed Reducers.

Whether it be the slow moving grinders and mixers of a cement plant or the requirements of high speed machine tools and line shafts, James Speed Reducers can be applied with a certainty of complete satisfaction.

There is no type of industry in which they may not be efficiently used.

Their construction makes them impervious to the action of dust, acid gas, moisture and extreme temperatures that are so harmful to open gears, belts and other types of speed reduction.

They are rapidly replacing the older types of speed reductions, for modern industry recognizes that power is money, and to save power and reduce maintenance costs is to increase dividends.

The D. O. James Manufacturing Co.

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Manufacturers also of
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to take a hair-pin bend and return sharply upon itself so that each weft thread, at some period, is acted upon on one side by the water traveling from the nozzle up through the felt and on the opposite side by the water returning through the felt into the suction chamber.

Exactly the same operation is performed on the warp threads except that the travel of the Conditioning Box across the felt takes the place of the travel of the felt across the Conditioning Box.

As I have stated, the width of the nozzle is approximately three-quarters of an inch long. The Conditioning Box is moved at such a speed that the felt takes more than one complete return during the time the Box is traveling the width of the nozzle. This ensures that every warp thread is acted upon at least once during each passage of the Conditioning Box across the felt.

For the class of work represented by this meeting, one Conditioning Box is sufficient on a Fourdrinier machine with press roll face of 100 inches. For a press roll face from 101 inches to 165 inches, two Conditioning Boxes are necessary, while beyond that size, the Conditioning Boxes are required.

It is hoped that the foregoing description has shown that the Vickery Felt Conditioner deals with the problem of Press Felts in an entirely novel way.

To summarize, it may be said that the Vickery Felt Conditioner—

Is absolutely automatic and requires no attention while operating or when felts are changed.

Increases production by eliminating stops for felt washing and by reducing breaks.

Prolongs the life of felts.

Enables a more uniform sheet to be produced.

Permits of a more uniform steam consumption for drying.

More than satisfies the user.

Pulp and Paper Mills Superintendents' Part in Forest Conservation *

By C. L. CECIL

Forester, Cornell Wood Products Co.

THE production of new wealth is dependent solely on the creation of something that can be used by the human race out of raw material. The business of a paper mill superintendent is to produce at a low cost—to produce a superior product—and thereby to produce wealth for the nation. Part of the process of manufacture which results in salable paper or paper products is carried on prior to the time that pulpwood as such reaches the mill. But this preliminary process of manufacture is primitive and incomplete. Forest conservation in which every man who is engaged in the paper business is vitally interested, because on it depends the supply of raw material which to a large extent forms his manufactured product, has several main divisions.

First, the protection of existing stands of merchantable timber and of young growth from fire.

Second, complete economic utilization of standing timber when cut.

Third, provision for new growth of usable, merchantable trees on lands now barren or when the existing merchantable timber is cut.

The part of the paper mill superintendent in aiding in the conservation of forest growth lies almost wholly within the second of the above divisions, that is: utilization. However, it is true that public sentiment must be behind conservation efforts as a whole before much can be done to accomplish the final end, namely: a perpetual supply of raw material for the wood using industries of this country.

Much has been done in the last few years to secure better fire protection, both by the states and by private individuals on their own holdings. It is felt by most men who have considered this question that fire protection, if adequate, will automatically take care of the provision for new growth on most barren and cut-over lands. It may be necessary to plant a few areas where repeated fires have destroyed any possibility of a forest regrowth for a long time to come. It is considered, however, that these areas which are in need of planting are very small and relatively unimportant. It must also be remembered in this connection that no efforts toward a new growth, no regulation of cutting or planting to provide for this growth, can be effective without adequate fire protection. As long as it is true as it now is that 35,000 acres a year can burn over in four counties alone in the state of Wisconsin, it is idle to talk of provision for new growth. These things must be rectified. The state and national governments should take the lead as they have already done to some extent, in providing for state-wide and nation-wide protection of forests from fire, and it is to be hoped that this generation will see the end of the terrific economic drain on the national timber resource of this country, which has resulted and is resulting every year from forest fires. If we had the timber today that has been destroyed by fire in this country, there would be no occasion to worry about a sustained supply of pulpwood for every pulp mill now running in this country for fifty years to come. As it is, there is very grave reason to worry about this sustained supply. Every year paper mills have paid increasing amounts in freight on forest products, reaching out into territory farther and farther from their mills. There is a limit to the distance over which pulpwood can be transported, and there is a limit to which paper prices can advance in order to take care of increasing costs of raw material.

Wood Is Chief Material for Paper

It is true that various substitutes are usable for wood, but in the last analysis, wood is the chief paper producing material. In considering the utilization, that division of forest conservation in which the superintendent of a paper mill can bear an active part, we are approaching a delicate subject. Mill superintendents have ever been inclined to hold up their hands in horror when a car of small run wood showed up in the yard. The utilization of standing timber to as small a diameter in the top as is consistent with economic practice has been the aim of the paper industry for a long time. The use of the term "economic practice" is significant in that on it is based everything that has been done towards more complete utilization since timber was first cut.

We are able to utilize material today which twenty years ago would have been left in the woods. It is not necessary to enlarge on this feature to any extent, as you are all conversant with it, but it is true that manufacturing conditions and the prices received for the finished product, control the degree of utilization which can be practiced in standing timber. We cannot use something which will show a loss on our operation. There is no question but that every mill can use wood to a three inch top and possibly smaller. The time has come when it may be necessary to use smaller tops than has been customary in the past. It is only right that the lower yields and the higher manufacturing costs which attend the use of small wood should be reflected in the price of pulpwood delivered on cars.

If it were possible to evolve a standard unit other than the measured cord of 128 cubic feet of closely piled wood, such as a unit based on yield of air-dry pulp, it would automatically compensate for differences in the run of pulpwood which goes through your plants. The cord unit has been in use for so many years that it would be difficult to make a change, and the producer in that unit has something which he can understand and check, which would not be the case in a unit based on yield by weight. I think it would be possible to grade pulpwood prices by the cord on a basis of average diameter determined by inspection just as we now determine the percent of undersized wood in any given car.

The use of substitute species, such as jack pine, poplar, etc., in lieu of the fast disappearing spruce, is a development in utilization which is here right now. If paper makers have not already been called on to make high grade stock out of timber far inferior to that which they have been accustomed to, it is very likely that some such call will be sounded in the future. A very strong impetus would be given the forest conservation movement if the superintendent of every pulp and paper mill considered it a matter of pride to use as much low price stock and undersize wood as possible, rather than to call for the very finest run of spruce pulpwood in order to improve production figures.

We have no desire to encourage the production of low grade pulpwood or to say that a mill should take low grade pulpwood, small tops, etc. As a matter of policy, we simply point out that material of this kind will have to be used in the very near future and we leave it to the superintendents to consider as to whether or not their costs would be materially increased by the use of such material.

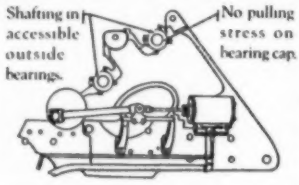
Fire Protection Essential

We believe that given adequate fire protection and complete utilization, the conservation of our raw material supply is assured without any further investment. We have not touched upon forest taxation, which is a vital part of needed provision for new growth, because this matter largely concerns the owner of timber lands. Young growth cannot be carried to maturity under present tax rates since mounting costs would destroy the investment prior to the time the timber could be cut and realized upon. Every American citizen,

*Presented at the Fifth Annual Convention of the American Pulp and Paper Mill Superintendents' Ass'n, at Dayton, Ohio, May 23, 1924.

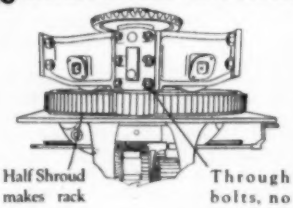
Why Industrials Excel

9 REVERSING ENGINES



Horizontal reversing engines make crane available for all services. Ropes unwind by power. Heavy loads are handled with security and accuracy.

10 EXTERNAL SLEWING RACK



The hard-working slewing gears are outside all other machinery, allowing easy access. Slewing pinion is in front where tipping under load is least.

Looking ahead 20 years—

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Thousands of INDUSTRIALS now ten, fifteen and twenty years old are still in as active operation today as when first purchased. Many as old as twenty-five and thirty years are rendering faithful, uninterrupted service. They are nicknamed in hundreds of instances, "The Old Reliable." INDUSTRIALS offer the very highest value per dollar in locomotive crane equipment.

Every INDUSTRIAL is backed by the utmost in engineering and manufacturing skill and experience. In use they function perfectly year after year in service that would rapidly ruin ordinary equipment.

The 17 types of INDUSTRIAL *locomotive cranes, capacities 5 to 200 tons, are all fully illustrated and described in our Golden Anniversary Catalog, a copy of which will be forwarded upon request.*

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INDUSTRIAL LOCOMOTIVE CRANES

and more especially that class of us who are dependent on a wood using industry for our income, should spare no effort to prevent waste in standing timber. That means he must do all in his power to prevent waste by fire or waste in cutting. State appropriations for fire protection need to be vitally increased and actively administered.

It is impossible for the private owner to protect his own holding unless the entire territory within which his holding lies is organized on a fire protection basis by a central agency. The logical central agency to organize fire protection within a state is the state government. The state government's activities in forest fire protection should be and are encouraged and to some extent guided by the national government. The protection of our forest lands is not a political question, and every aspect of it should be divorced from political influence. We must keep it distinctly in mind that the forest with which we are concerned is a crop. It is a crop to be harvested, a crop that produces new wealth, a crop that gives employment to many thousands.

Certain areas of forest unquestionably must be reserved for parks and for similar recreational areas. We are not concerned with that sort of a forest. The term "forest conservation" does not mean that all forests should be left standing until they rot and fall down, and that then the moss covered log should be carefully guarded to increase the scenic beauty of the vicinity. We have extremists in every movement. Government regulation of private lands will not secure forest conservation. It is not possible to change economic fact by means of legislation. The most important factor in maintaining a continuous supply of raw material for the wood using industries of this country, is adequate fire protection. We must have it, and the sooner we have it, the more certain we will be that the paper and pulp mills will not go the way of the saw mill.

Fillers *

By ELBERT G. MILHAM, M. E.
Bryant Paper Company

AS ALL of the book mill superintendents here and most of the writing mill superintendents have occasion to use various fillers in the course of their daily work, I thought it might be profitable to devote a few minutes this morning to the discussion of some of the more practical details connected with the use of fillers of different types.

It is hardly necessary in a gathering of this kind to state that fillers in book and writing papers have a two-fold purpose. The first is to give the sheet certain desirable physical characteristics, such as opacity, flexibility, body, finish, etc. The second is to lower the cost. While, originally, fillers were looked upon only as adulterants, they are now regarded as necessary constituents in many grades of paper. As a matter of fact it often happens that purchasers of printing papers actually specify a minimum filler content for certain of their papers.

Materials

Strictly speaking a filler is any substance which is so finely divided that it fills up the spaces between the fibres composing the sheet of paper. However, common usage in book and writing mills has limited the meaning of the word to such an extent that to the practical superintendent it means a white, grit-free mineral substance which can be obtained at a low cost. The only materials which answer these requirements at the present time are English clay, American clay, Talc, Blanc Fixe, Anhydrous Sulphate of Lime, Crystallized Sulphate of Lime, and Carbonate of Lime. These materials have different physical and chemical properties which cause them to give different characteristics to the papers in which they are used.

In order to discuss intelligently the types of fillers best suited to give purposes, it is necessary to understand the mechanics of their action in the paper, for their action is almost entirely mechanical. The fibres composing the sheet are porous and lie in a tangled mat which gives rise to relatively large spaces between the fibres. It is thus evident, that if a more or less solid surfaced sheet is desired, a filler must be used which will not only fill up the spaces between the fibres, but also the spaces within the pores of the fibres themselves. This apparently leads to the conclusion that one of the fundamental characteristics of a good filler should be a sufficient range in particle sizes to fill the smallest as well as the largest spaces within the sheet. The other less important but more widely recognized characteristics of a good filler are the following:

1. A bright white color.
2. Freedom from dirt and grit.
3. Low solubility in water.
4. Freedom from chemical action with alum.
5. Freedom from effect on sizing.
6. Absolute uniformity.
7. Low cost.

Now, with a list of characteristics of an ideal filler in mind, it might be profitable to consider the fillers available and see how closely they conform to the ideal.

English Clay

Of all filling materials available, clay has by far the widest range of particle sizes varying all the way from those which can be seen only with the aid of a powerful microscope up to those which will scarcely pass a 200 mesh screen. From this standpoint, English clay is the ideal paper filler. However, it has its disadvantages, as will be shown by comparing with the ideal.

1. The color of even the best English clay is by no means a bright white, but varies in shade all the way from a light cream to a blue-gray.
2. It is only fairly free from grit.
3. Its solubility in water is practically zero.
4. It has no appreciable action with alum.
5. It greatly reduces the effectiveness of size, as will be explained later.
6. Being a natural product, it is hopeless to expect that it will run perfectly uniform.
7. The cost is moderate.

American Clay

As a class, American clays have an even wider range of particle sizes than the English clays, and, in this respect, they are of more value than English clays. However, in other respects they are far from the ideal.

1. Their color is considerably farther from a bright white than English clay.
2. As a rule they are grittier than English clays.

3 and 4. They are practically insoluble in water and do not react with alum to any great extent.

5. They greatly decrease the effectiveness of Rosin size.
6. They are considerably less uniform than English clays.
7. In most localities their cost is somewhat lower than that of English clays.

Talc

Talc has an extremely small range of particle sizes which somewhat curtails its utility as an all around filler. However, at certain points it is superior to the clays.

1. The color of a good talc is considerably better than that of the best of English clays.
2. It is apt to contain more or less fine sharp grit.
3. It is practically insoluble in water.
4. It often contains carbonate of lime and other impurities which cause it to foam when treated with alum.
5. It has practically no effect on sizing.
6. As a rule it is more uniform than the clays.
7. Its cost compares favorably with the best English filler clays.

Blanc Fixe

Blanc Fixe is very similar to talc in its action, although the color is usually brighter and it is less apt to contain impurities. However, it is comparatively expensive and as a result, its use in this country is limited almost entirely to specialties.

Anhydrous Sulphate of Lime

Like talc and Blanc Fixe, this material has a low range of particle sizes. However, it has a few advantages over any of the fillers mentioned thus far.

1. It has a brilliant white color.
2. It usually is absolutely free from dirt and grit.
3. It is soluble in water to the extent of about one pound per 50 gallons.

4 and 5. It has little action when treated with alum and does not greatly decrease sizing efficiency.

6. Being a manufactured product, it usually runs extremely uniform.
7. Its price is not out of line with that of a good clay.

Crystallized Sulphate of Lime

This is a manufactured product having properties very similar to the Anhydrous sulphate of lime. The color is almost snow white and is absolutely free from dirt and grit. However, it is almost twice as soluble in water as the Anhy-

*Presented at the meeting of the Book and Fine Writing Paper Division of the Superintendents' Association, held at the Sorg Paper Co., Middletown, Ohio, during the Fifth Annual Convention, May 23, 1924.

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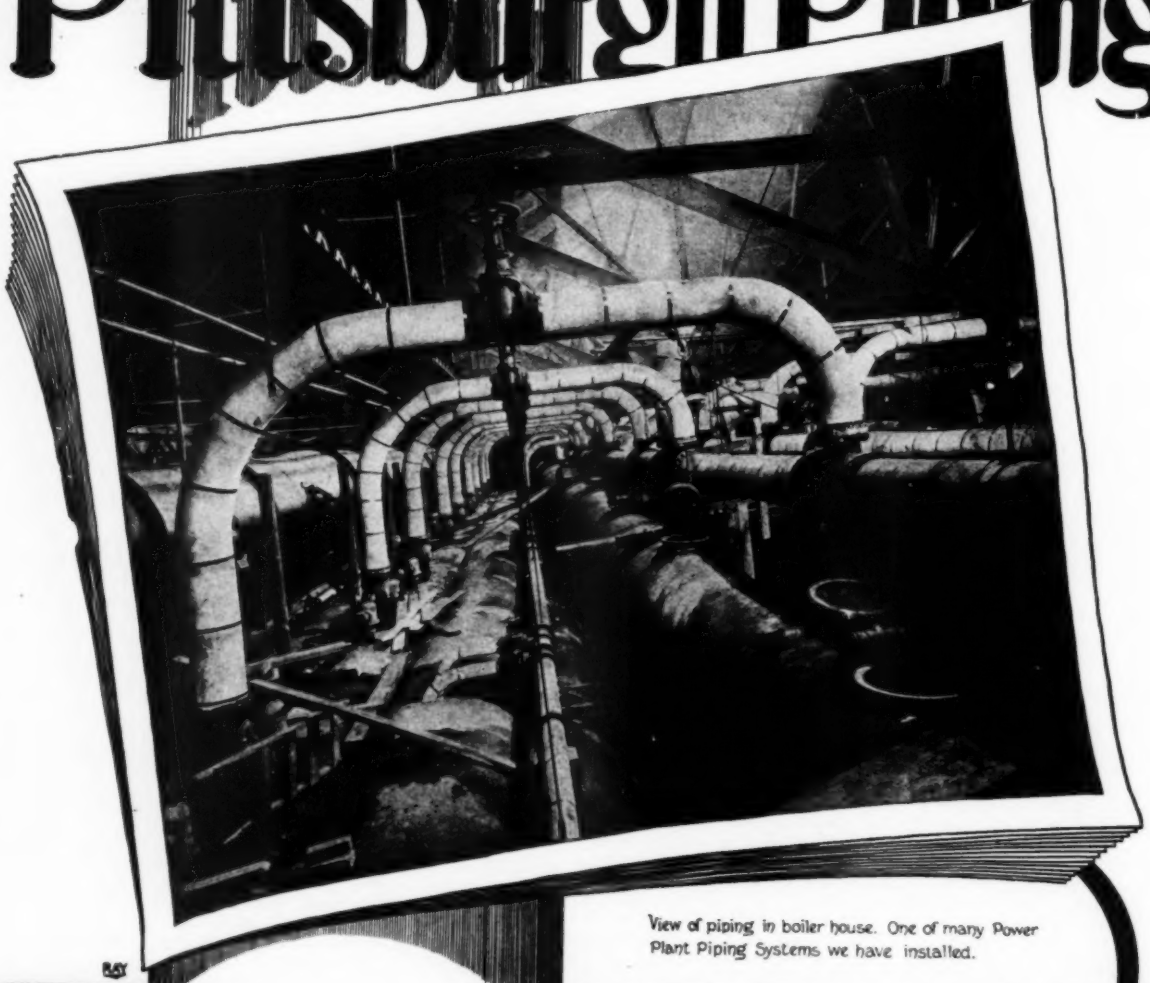

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drous product and is relatively expensive. This limits its use to the highest grade papers and specialties.

Carbonate of Lime

This material is rarely considered as a paper filler, although it has many desirable characteristics. However, it has one very serious fault. It reacts with alum giving an evolution of carbon dioxide gas which precludes its use in all papers where rosin size and alum are used.

Effect of Fillers on Sizing

As most paper makers know, a majority of fillers have a very decided effect upon rosin size. This effect becomes very serious as the proportion of filler increases, and in papers containing over 10 to 12% ash the problem of hard sizing becomes a truly difficult one. The reason for this lies in the fact that sizing is essentially a surface phenomenon. The sheet does not become thoroughly sized until the surface of every particle of fibre and filler composing the sheet has become coated with the sizing agent. It is evident that with the addition of a filler to the sheet the surface which the size must cover is increased enormously. It is also evident that the surface per unit weight of filler becomes rapidly larger as the individual particles of the filler become smaller. This accounts for the fact that the very finely divided and semi-colloidal clays have a far more disastrous effect on rosin sizing than the coarser fillers such as talc or sulphate of lime.

Retention

The matter of filler retention is something which is of more direct interest to the chemist and cost man than to the superintendent. However, it probably would not be out of place to touch on it briefly here. The main process of paper making consists essentially of separating solids from water by means of filtration through a screen varying from 60 to 80 mesh. Consequently, it is evident that the matter of loss of filler through the meshes of the wire is one of considerable practical importance. It is a well known fact that the proportion of filler retained in any given type of stock varies considerably with the sort of filler used. In discussing the matter of filler retention in any given stock it is absolutely essential that we keep constantly in mind the one fundamental fact that it is absolutely out of the question to prevent fillers going through the meshes of the wire if they are not definitely tied up with the fibres. This reduces our retention problem to one of assimilation of filler by the fibre. As was mentioned above, beaten fibres are relatively porous and present an enormous number of crevices for the assimilation of particles of filler if the particles are small enough. This leads to the natural conclusion that obtaining maximum filler retention is largely a matter of selecting materials with a gradation of particle sizes, such as will fill the available spaces most efficiently. This helps to explain why properly selected clays give higher retention as a rule than the coarser fillers.

Generalizations

While it is extremely dangerous to make general statements in matters pertaining to paper making, it might be safe, in order to get the discussion started, to make the following generalizations:

1. In cases where color, printing surface and flexibility are primary considerations, a finely divided English coating clay should be used.
2. If the factor of cost is more important than color, first class domestic clays may be considered.
3. If color, opacity and hard sizing are of first importance, irrespective of cost, Anhydrous sulphate of lime would probably be the filler to select.
4. If the presence of a small amount of fine grit is not objectionable, and a bright, hard sized, filled sheet is desired, talc can be used with greater economy than sulphate of lime.
5. In specialties, where the factor of cost does not enter in to any extent, blanc fixe may be used in order to obtain a special color or texture.
6. In cases where size and alum are not used and a white, smooth, dull surfaced sheet is desired, carbonate of lime can be used with good economy.
7. Finally, in all cases, it is well to remember that filler is ordinarily the cheapest raw material put into paper, and for this reason, if for no other, it does not usually pay to quibble over a few cents difference in cost if the utility of the finished paper is to be reduced thereby.

Life is in helping the other fellow. Some men spend their time building hurdles for the next fellow to climb when they might be building ladders for themselves. There is more money and satisfaction in ladders than there is in hurdles.—Making Paper.

The Future Paper Maker*

By C. A. BRAUTLECHT

WHAT the requirements were for the earliest paper makers in China cannot be determined. We may guess, or deduce, that they were relatively intelligent and industrious persons. The Moorish paper makers who introduced the art of paper making into Spain and Italy likewise were an intelligent class of workers according to the records they have left. We find little or nothing, however, about their relative social position, their hours of work or the relative profitableness of the industry. About the middle of the twelfth century we find in the records that a paper mill was established at Fabriano, Italy. Shortly after this event there was a spreading of the art into France and Germany and, about 1687, into England. When Wm. Rittenhouse established the first paper mill in the United States or rather in the Colonies, in 1690, there had been but little change in paper making procedure and in paper makers for a long period of time. The first mill in Massachusetts in 1730 also had little about it that was novel or caused a change of paper makers into a different type of workers. With the advent of the making of paper in continuous webs, following the patents of P. Robert and the Fourdriniers, early in the nineteenth century, our paper maker became a different type of man. Then came the factory system and with this, of necessity, the labor question.

With the advent of chemical pulp and a host of other raw materials for paper making, the paper maker was obliged to become more of a thinker in connection with his business and spend more time in figuring and estimating and in estimating and figuring. Popular opinion changed. The paper maker became less of an artist and more of a jack of all trades, with a knowledge of raw materials, power, steam, machinery, markets, costs, labor, etc. It came to be much more of an art to induce, persuade or threaten workers to co-operate in the making of much paper within rather broad limits of requirements as to colors and weights than it was to make hand sheets by a rigid routine procedure.

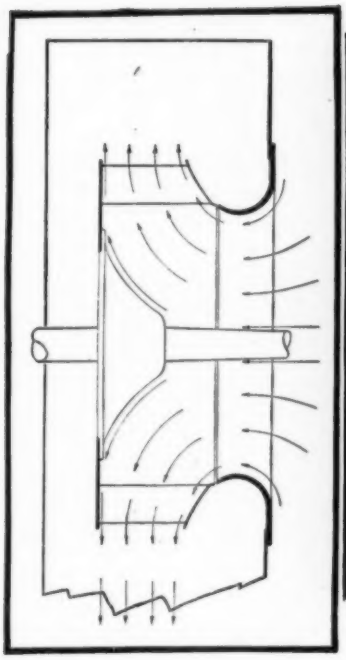
While many younger branches of industry became scientifically conducted, the paper industry grew up with the addition of an occasional new mechanical contrivance. During the past few decades a greater consideration has been given to the nature of the materials used by the paper maker and to the question of detailed costs. This brings us to the present period in which the paper maker is really, of necessity, a rare man with a difficult job, if we consider him from the viewpoint of what he must do with money, raw material, equipment, skilled and unskilled workers, and a supercritical body of public servants or dictators, and the consumers for his product.

In making hand-made paper by crushing, cooking with lye and washing the inner bark fibres of the paper mulberry tree and then artificially felting them, the early paper maker, after learning the procedure, had purely a routine operation. He had no complex calculations to make. No one told him that the price of coal was going up and that this factor alone would eliminate his profit. No one told him that the mill would have to turn out a profit every year. No one stated that the introduction of a certain piece of equipment would reduce production costs ten per cent. The salesman did not tell him that his paper was too much two-sided in color or that it was five points too low in strength. He sold the paper he made and undoubtedly tried to make a better paper than his competitor, to give it a personal touch.

The old European paper maker, using linen rags, was obliged to utilize water power for pounding or beating rags until the beating engine or Hollander furnished him improved equipment. Then, with wire cloth, he was beginning to hear the slogan "increased production." With his beater, wire screens, felts, screw press, size tub and polisher, he had a complete equipment and he could solicit the orders from the king of the realm and handle the job himself. There were no standards as we know them now and he usually had pride in the job he turned out.

During the first two decades of the twentieth century there have been tremendous combinations of capital made by the affiliation of plants in certain industries. Quantity production has been the keynote to large profits. It has also been the factor which has given organized labor the opportunity as well as the example to grow in strength. In the paper industry this influence of combinations has caused more definiteness in specification of products as size of orders increased. With production facilities exceeding normal consumption of paper at present the buyer desires quality at a quantity price. It has become the habit and will perhaps continue through normal times. Increased foreign production without in-

*Prepared for the Fifth Annual Convention of the American Pulp and Paper Mill Superintendents' Association at Dayton, O., May 23, 1924.



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If air could be photographed during its passage through the *ordinary* fan, countless pockets, eddies and wild currents would be observed that cut down fan efficiency. Air has weight, like all other fluids, and its inertia is a factor to be reckoned with.

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The accompanying diagram explains the "stream line" principle. The guide at the inlet prevents eddies at the edges. The flange of the wheel being set at the proper angle guides the air in a direct line as it enters the fan. The contour of the hub directs the air to the vanes of the fan along a gradual curve. There is not an abrupt change of direction during the entire passage of the air through the fan.

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creased consumption in the country of origin will make for increased competition, a multitude of governmental regulations, tariffs and subsidies can be expected. This all leads to one conclusion—Selling price of product must be such that a reasonable interest on a fair capitalization can be obtained, either by reducing costs or increasing selling price, with little possibility of the latter.

With increase in population and the resultant increase in average land values, there will come increase of taxation until a political disturbance occurs. Our paper makers must, therefore, not only know about making paper by use of quality and quantity production machinery but they must become increasingly more familiar with the human element needed to man a paper mill. They must know more about raw material possibilities, other raw materials than those used in their mill.

Our future paper maker must be a storehouse of scientific information, economic and business laws, and a man with an accumulated mass of information from practical experience. He must find time to read about the new things in paper making and the future literature on paper making will be even greater than it is at present, and—more technical.

As certainly as night follows day, we can look forward to the second half of the twentieth century to be a period of intense competition. We cannot expect a marked reduction in tax rates or procedures during this period and a greater proportion of our population will probably be engaged in government activities and at relatively better pay than at present. This will mean increased taxation and require more production per unit population and exchange per unit time of money and commodities. How will this affect the paper industry?

The machine development of the present will probably continue during this period, probably not in size of machines and auxiliary equipment but in smoother and more economical operation. The quality market will be more competitive. The American paper maker will be forced to make a good paper from rags, ground and chemical wood pulp, esparto flax and other straws, and mixtures of these and other raw materials. To do so economically, better control than we have today must be exercised. Wastes will be more closely watched. How will these changes affect our paper makers?

We can define paper makers of this period as men who have an intimate knowledge of the raw materials, power supply and control, pulp and paper making machinery and auxiliary equipment, their labor situation, the market for their products and a large number of producing and overhead costs. There will be many workers and men highly skilled in one detailed operation in a mill. There will be very few real paper makers in any one mill and they will have much responsibility. There will probably be an increase in individual effort at efficiency and an increase of seriousness with a greater public conscience.

Where will the young men be recruited from for these positions? They will probably be picked technical college graduates together with young men of marked ability in mills who have the ambition and the willingness to make sacrifices of good times to reach a desired goal. For both technical college graduates and young mill men competing for these posts of responsibility, there will be very careful studies made of raw materials, energy and chemical changes, waste, labor, costs, etc. These studies will come before or with a normal load of hard mill work near or at the bottom of the ladder. Practically all of our present paper mill superintendents and managers today are honest, reliable and industrious men. The future paper makers will have to be as good or better than the present paper makers as common standards are raised and as the present popular interest of old and young in chiefly having a good time or being entertained is replaced by a more serious purpose in life. The almighty dollar or its equivalent will be more striven for.

Our future paper makers must be better informed about good and bad features of intricate equipment as it is applied to their mill conditions and products. They must keep the welfare of their skilled and unskilled workers and the families thereof well in mind, ready to fight the introduction of harmful influences, ready to aid in making their mill town or section as good a place to live and work in as is possible. It is probable in such a period there will be a closer relationship between the sales staff and the producing staff with the selling of paper which the mill is in an especially favorable position to make at a profit, rather than to list and accept orders for a large variety of papers and then try to make them, often with the uncertainty if a profit can be made.

Ethical phases are among the most important today in the operation of making paper. During the past century, the ever-increasing struggle for financial control, and the competition for the best markets, have affected labor and the small group of men who stand between labor and capital, chief among this small group is the mill superintendent. C. D. Wright, U. S. Commissioner of Labor in 1902, has studied the labor question extensively from the viewpoint of religion and social organization. Many theologians believe that advancement in social relations can be obtained only through the church. Many politicians believe that labor can be controlled entirely by law. Many capitalists believe that labor can be controlled exclusively by wages. Probably with such a complexity of humans as we have today, the above three factors and many others must be considered. All branches of mankind must subsist by their accumulative and specialized efforts. Present tendencies indicate that centralization of governmental power will continue in Washington, that the family, labor, capital and wealth, politics and the state, will require more consideration on the part of the employer and mill superintendents in the future than they did in the past or do at present. Education of the young, employment of children, employment of women and women suffrage will involve greater problems than they do today.

The question of how labor is to be kept contented, how work is to be made more generally attractive and in many cases more remunerative, how the various groups in our complex society may have a just share in the distribution of profits are questions that our future mill superintendents must be informed upon. Industry always has had and always will have to contend with the extremes among capitalists and laboring groups. The former will want too much of a proportion of the rewards of their joint efforts. The latter will always feel that capital is unjust and that all government, religious and social effort is arrayed against them to keep them down. The lazy, indifferent employee cannot be convinced by any means that he is only a liability to his employer. He will continue to feel that only absolute necessity forces him to work or give the impression that he is working. He entertains the thought that his services are worth much more than he receives. He will always be with us as a necessary evil as long as measurement of service is a relatively intangible factor. There are many discontented mill employees who do not realize that many of the "bloated capitalists" whom they would like to separate from their money are nothing more than workmen of former days. These have had the vision of rainy days or old age when they could get no work, and, who have sacrificed much in order to purchase a few bonds or stocks, the income from which would perhaps keep them from becoming dependents on the community. They probably would not believe that while they, as dissatisfied employees, were obtaining relatively good pay during the past three years that the small capitalist who was formerly a worker, or his widow, were barely existing. It is very true that the children of the idle rich will always be with us and flaunt both their idleness and wealth before the laboring classes, making trouble for those whose positions involve the continual effort of peace-making between capital and labor. Corruption will always be more prevalent among the governing and capitalistic classes because of the much greater opportunity. If men in power would always keep in mind great historical events such as the French, Russian and many other revolutions they would undoubtedly reduce the number of future social and political troubles.

Since the welfare of a community is chiefly associated with its homes and a moral family life, it becomes necessary for the future American mill superintendent to plan and to work for better homes and a better community for his employees.

With the development of luxury and an ever-increasing desire for money, the workers must keep to the straight and narrow path if they desire happiness. Luxury and much money are corruptors of men and morals. To maintain a contented group of workmen interested in him, and to have them assured that he is interested in them, is one of the future mill superintendent's duties.

Time is fast changing procedures everywhere in the world. The world's undeveloped and undiscovered resources are much less than they were a few decades ago. As they decrease the United States will become more like Europe. Thrift and economical living will become of greater necessity for the workers. Will the recent large strikes in many industries in England be followed by some here in ten years, in twenty or fifty years? We cannot tell. Much depends on the education of the workman and his family in the immediate future. Reformers will work, reforms will be instituted, our living will become more complex—up to a limit. Most real reforms will come, however, through some one person, or a group, effecting the reform at a money profit to themselves, be it in reducing the cost of food, clothing or shelter.

We, in America, must have contented farmers, contented

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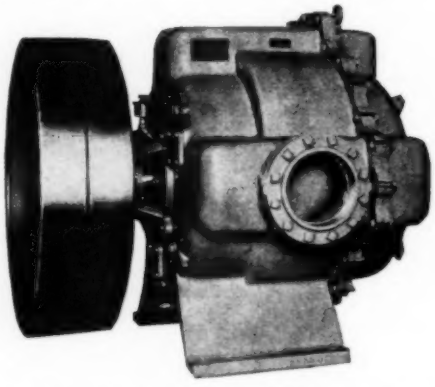

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mill workers, contented traders, contented bankers, contented politicians, in general a contented people as a whole. As long as the trader is contented at the expense of the manufacturer or the farmer, unrest will exist and the paper mill superintendent's job will be the more difficult.

Factories and mills in the past have always had an uplifting effect upon their employees in general. We can follow this effect through our factory and mill development in all parts of the country, especially in the south at present. Thus the factory system, in itself, is on a sound basis.

A paper mill labor system has to do with the combined operation of many classes and types of workers in skillfully tending productive machines and their auxiliary equipment propelled by centralized power. The pulp and paper mill is now becoming a scientific structure concerned with the production of pulp or paper or both. The superintendent must be the master of the mass of machinery indirectly and of the workers directly but harmoniously if he would get results and attain some degree of happiness. The superintendent must recognize economic laws and conditions. War between capital and labor means loss to both and must be avoided if possible. Unreasonable employers and employees will always exist, however, and as a consequence strikes will occur. Arbitration may help or only aggravate and postpone an industrial war. Thus the superintendent and the paper maker must be alert if he at times finds himself between the fires of discontented workmen and dissatisfied employers.

In closing, we can look forward to the future paper makers to perpetuate the good features of the industry that have been developed by the paper makers during the past and present periods. They will have to be especially good men and they will have very exacting requirements to meet.

Pacific Coast News

June 1, 1924

Western Paper Market Good

Under date of May 16, the Journal of Commerce, Seattle, said:

"There is a slight diminution of the new order business received by board and paper mills of the state of Washington. This is attributed mostly to the cut in business originating in California. Board mills, however, are operating to capacity, which is twenty-four hours daily and there is sufficient business to continue.

"Paper distributors report good demand for school supplies for fall delivery. Orders for fish and fruit can labels are good. Fruit wrap supplies are not expected to total in volume the demand last season because of smaller crop tonnage.

"Paper mills are operating to capacity and are approximately ninety days behind in orders. Activity is expected by distributors until July 15 when a period of lessened buying will prevail until September. Paper mills operated the first one-third of the year in about the same volume as in the corresponding period last year. The first quarter of this year, however, shows an advance over the last quarter of 1923. Prices are firm."

Plan New $3,000,000 Mill for Seattle

A. E. Middleton of the Seattle Paper Company had laid before Mayor Edwin J. Brown his company's plans for establishing a $3,000,000 paper plant in Seattle. If plans are agreed upon by city officials and the company, an application for a power contract will be made by the company. Several conferences have been held at this writing.

An application for a power contract by the Puget Sound Pulp and Paper Company is now pending before the city council. City officials have delayed action because they are not convinced that the company is fully organized and ready to go ahead if given a power rate. The Seattle Paper Company has mills at several places.

The Hawley Pulp & Paper Company of Oregon City, Oregon, has purchased a tract of pulp timber containing approximately 11,000 acres. The tract lies between Garabaldi and the Newhalem River and is estimated to contain 400,000,000 feet of timber. W. P. Hawley is president of the company.

One of the most imposing and attractive industrial structures in the Southwest is the claim being made for the $100,000 administration building of the Pioneer Paper Company of Los Angeles, largest manufacturers of roofing and building papers on the Pacific Coast. The building is now under construction and will be completed in about sixty days. It is of the Spanish Renaissance type, typical of residential construction in the Southwest, but marking a new step in industrial designing. Exterior trimmings of wrought iron are to embellish the building, which is to have a 90 foot frontage and a depth of 150 feet. It will house the executive and clerical forces, as well as display and sales units.

Columbia River Mills to Install Second Machine

Bids have been called for on a second paper making machine to be installed at the Columbia River Paper Mills, the new $2,000,000 concern at Vancouver, Wash. The additional machine will be installed as soon as machinery now being placed is set up, according to Fred H. Fuller, the plant's superintendent.

The new machine will be devoted to finer grades of paper than will be manufactured by the machine now installed. The new mill is expected to commence operation about the last of July.

Fraser valley camps cutting pulpwood for manufacture in Everett, Wash., closed on May 20, pending general election and until operators know definitely that there is no possibility of a pulpwood embargo being imposed by the provincial government. James Duncan, who employs forty contractors cutting pulpwood in the vicinity of Harrison Mills said other contractors intended to follow the course set by him.

The Whalen Pulp & Paper Company's plant at Port Alice on the west coast of Vancouver Island, will begin production shortly, following a closed period since the beginning of March.

Being Taxed Out of Business

At a conference of manufacturers in the offices of the American Paper and Pulp Association, May 29, to discuss the importation of foreign paper and pulp, Henry W. Stokes of Philadelphia, president of the Association, declared that the American paper and pulp manufacturers are being taxed by the government to put themselves out of business. Mr. Stokes made this statement:

"The customs situation as regards the proper assessing of import rates on Swedish, Norwegian, Finnish, and German, etc., pulp and paper is of vital interest not only to the American pulp and paper manufacturers but to all concerns doing business with such manufacturers.

"The reading of the evidence taken at the public hearing at Washington recently on Section 28 of the Jones bill, discloses a perfectly amazing situation. A prominent importer testified that he had contracted for and expected to import into the United States during 1924 a total of 700,000 tons of foreign pulp, principally Scandinavian. This is coming in at such prices that the American mills cannot compete—pulp being on the free list.

"It would be bad enough if this were being brought in by foreign-owned ships but the distressing circumstance is that the United States Shipping Board is carrying this pulp, taking a loss of $25,000 on each ship per voyage which figures about $4.00 per ton of pulp, such loss comes out of the United States Treasury and in turn is charged back proportionately to the American pulp and paper manufacturers. Therefore, the American pulp and paper manufacturers are paying taxes to put themselves out of business. Can you conceive of anything so absolutely unfair and ridiculous as to permit the use of American ships for this business? The answer, of course, is that these importers are using United States Shipping Board ships because they operate at lower freights, whereas if the Shipping Board withdrew the ships, they would have to use foreign ships and have to pay higher freights, which would be at least that much protection to the American industry.

"Another amazing feature of this hearing is that notwithstanding the frightful blow this arrangement delivers to the laboring people employed in American mills, the transportation companies bringing the wood down from our forests and delivering the finished product to points of consumption, no representative of such interests appeared at the meeting to show the true facts in an effort to correct the trouble and apparently no one of the Congressmen at the hearing had been posted by any of the above interests so that it seems to me that this intensely interesting situation has been woefully neglected."

The Right Oil or Grease *for* Each Machine

The most important factor contributing to the efficient operation of every type of machinery, is perfect lubrication—**the right oil** or grease for each machine.

The Industrial Lubricating Engineers of the Associated Oil Company have made a scientific study of all types of paper and pulp mill machinery.

They have succeeded in developing the right oil or grease for each machine, taking all the conditions of plant and mill operation into consideration.

These Associated Engineers are at your service. They will gladly analyze your lubricating problems, and recommend or **create,** the right oil or grease for each machine.

Wire, write, or phone our nearest district office, and we will serve you at once. This service is available to you, without obligation.

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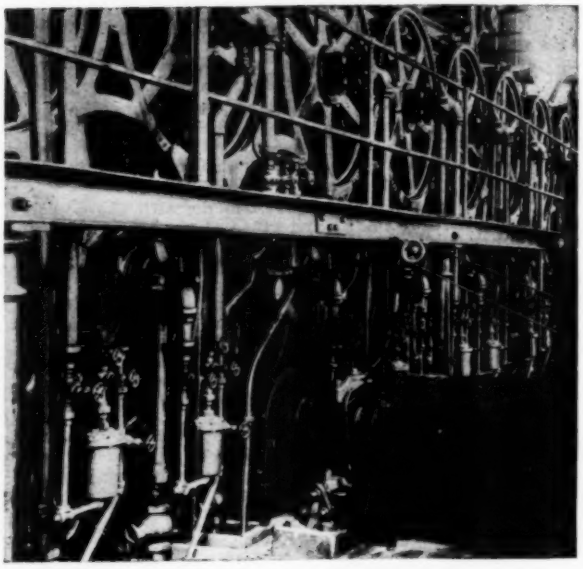


Here's where the Armstrong got its start—

IN PAPER mills—where steam traps get their hardest test—the Armstrong gained a reputation that carried it into every industry where there is condensation to drain and steam to trap.

And where the Armstrong got its start, it still leads. No other trap has been able to rival it for paper mill service, because no other trap can duplicate the advantages of the Armstrong inverted submerged bucket principle.

As a direct result of this entirely different operating principle the Armstrong gives greater capacity, is self-scrubbing, absolutely non-air-binding, and cannot pass steam. An installation—typical of hundreds in paper mills—is illustrated above.

The traps are draining a paper machine dryer at the West Virginia Pulp & Paper Company mill at Tyrone, Pa. Each dryer is drained with an individual trap, the traps being installed with bypasses and standardized connections so that they are quickly removable and interchangeable. Careful tests have demonstrated that maximum efficiency is obtained in draining paper machine dryers with Armstrong Traps.

Ask for the catalog and details of the 90 day test offer.

Armstrong Machine Works
322 Steam Saving St.
Three Rivers, Mich.

The Standard Armstrong Trap is furnished for pressures from 0 to 300 lbs.—for service on vacuum where inlet pressure is greater than outlet pressure—for draining water from compressed air expansion tanks, separators, etc.—for service on grease. The Armstrong Special is furnished for pulsating pressures.

Armstrong Steam Trap

PI 6-M-RTG

Canadian Section

Canadian Exports and Production Keeping Up

Montreal, June 1, 1924.

Exports of pulp and paper for the month of March were valued at $14,720,223, an increase of $3,773,024 over the previous month and the highest total recorded since October, 1920, when prices for pulp and paper were considerably higher than they are today.

Newsprint production by Canadian mills reached the total of 115,572 tons during the month of April, which is the highest monthly production on record. During the first four months of 1924 the Canadian newsprint output exceeded the output for the corresponding period of last year by about 50,000 tons or about 12 percent.

Sir Wm. Price's Impressions of Europe

On his return from a three months' trip in Europe, Sir William Price in an interview endorsed the recent statement of Lord Rothermere that, owing to Scandinavian competition, there would be no market for Canadian wood pulp for a long time to come. "People in Canada seem to fail to realize that in dealing with these countries we are dealing with producers whose labor is cheap, whose systems have been perfected by long years of experience and whose resources of supply are thoroughly and permanently protected by sane forestry methods. Sweden was probably the first country in the world to appreciate and grasp the possibilities of the pulp industry. Today complete and adequate systems of communication, coupled with a Government controlled forestry system keep costs stable, whereas in Canada our cut costs us more year after year as we have to explore and develop new and more distant territories to feed our mills."

Speaking of the British pulp market, Sir William paid a high tribute to the sagacity of the Englishman. "We think here in Canada and in the United States that we are traders, but we cannot begin to enter the class of the Englishman who is an old and tried merchant. As Canadians we think we are the salt of the earth insofar as the manufacture of pulp and paper is concerned, but the fact remains that the biggest mill in the world is in England, at Sittingbourne, with a daily output of 540 short tons, as compared with a record of about 500 tons in this country. Our people do not know these things, the public at large does not appreciate them, and I am afraid that the average Canadian is apt to think that the Englishman knows nothing about pulp. In reality British manufacturers can give us the lead in many ways."

Canadian Pulpwood Dealers Organize

At a meeting held recently in Montreal of the pulpwood dealers of the Eastern Provinces, pulpwood merchants from four provinces were present with the intention of forming a Canadian-wide Pulpwood Dealers' Association to protect their trade and insure Dominion-wide co-operation in all movements aiming at forest conservation, fire protection and improved operating methods.

The following officers have been elected by the newly-formed association: President, Angus MacLean, of Bathurst, N. B.; vice-presidents, Jas. Thompson, Toronto, A. Auger, Quebec, R. P. Bell, Halifax; executive committee, J. O. Auger, D. H. Pennington, C. E. D'Auteuil and Frank Byrne, Quebec; M. E. Walley and C. C. Goodhue of Sherbrooke; F. W. Perras, Gracefield; R. Girouard, Smith Falls; T. J. Rankin, Eganville; W. Roy Smith, Annapolis; C. E. Clowes, Fredericton.

Among the aims and objects of the new organization will be: investigation and study of all matters of general interest to owners, producers, jobbers and dealers; arbitration in case of dispute affecting members of the association; collection, classification and distribution to members of all statistics of any value directly relating to the business; the encouragement of a friendly interchange among the members of information that would in any way assist in stabilizing and otherwise improving the conditions under which the business is now carried on. It is felt that the new organization has a long period of usefulness ahead of it.

The officers met members of the Quebec Pulpwood Dealers' Association, and the necessity and objects of the Canadian-wide association was explained to them. All the members of the Quebec association promised to support a Canadian association, although it was clearly understood that the local organization would be retained.

Considerable Expansion Planned by Price Bros.

At the annual meeting of Price Bros. & Co., held in Quebec on May 14th, Sir William Price reiterated the intention of the company to carry out the expansion program which was decided upon some eighteen months ago, and which contemplates increasing the output of the Kenogami mill from 300 to 500 tons of newsprint daily, construction of a new 200-ton mill to be started shortly and completed next year, construction of a second 200-ton mill to be started next year and completed by the end of 1926. This will bring the total producing capacity of the company up to 950 tons of newsprint a day.

Sir William, in pointing to the contract for 200,000 horse power from the hydro-electric installation being erected by the Quebec Development at the Grand Discharge of Lake St. John, which necessitate the putting into effect of the expansion program of the company, rather confirms reports to the effect that some pressure had been brought to bear upon the company by other manufacturers in an effort to keep Canadian production down to normal increase in consumption.

What effect these large developments will have upon the industry as a whole remains to be seen. There are two points of view on the matter. Sir William is optimistic on the outlook for the industry, as his decision to proceed with the expansion proves, and it is to be remembered that he has a reputation for conservatism. On the other hand, it will be argued that, in addition to other new developments the absorption of this additional 500 tons daily will require a more rapid disappearance of the industry in the United States, together with a rapid expansion of demand.

Safety Flag Presented to Miller Brothers

Miller Bros. Paper Mills, Glen Miller, Ont., were recently presented with a beautiful silk Canadian flag and a handsome silver shield in recognition of the mill's having had the least number of accidents throughout the year 1923 of all the class "B" mills in Ontario, that is, those employing two hundred men or less. The presentation was made by A. P. Costigane, secretary and engineer of the Ontario Paper Makers' Safety Association, who complimented the men upon their excellent record of only one accident in the entire year with a loss of 12 days, which is equal to 0.27 day lost per full time workmen, and which compares remarkably well with the general average of the 20 competing mills with 253 accidents entailing lost time of 3,830 days, equal to 2.15 days per full time worker.

The flag, which bears the inscription "Presented by the Ontario Pulp and Paper Makers' Safety Association" and "Won by Miller Brothers Paper Mills," becomes the permanent property of the mill. The large silver shield bearing the inscription "Ontario Pulp and Paper Mills Accident Record" is surrounded by several smaller shields upon which is the name of the winning mill with the year, and is held by the mill having the best accident record for any one year. The previous winners were Don Valley Paper Co., Toronto, 1921, and Provincial Paper Mills, Georgetown, 1922.

Chas. Wilkins made a fitting reply on behalf of the men and assured Mr. Costigane that nothing would be left undone that would aid in the mill retaining the trophy again this year.

Governor General Visits Pulp and Paper Districts

His Excellency, Lord Bying of Vimy, Governor General of Canada, recently made a tour of the North shore of the St. Lawrence and visited several pulp and paper mills.

At Three-Rivers he went through the mills of the Wayagamack Pulp and Paper Co., Ltd., and was afforded an opportunity to watch operations of the plant. At Shawinigan Falls and Grand'Mère, where are located the mills of the Belgo-Canadian and Laurentide Companies, respectively, the

PULP PRESSING

PULP PRESS

THE illustration shows our standard 600 Ton INVERTED PRESS for wet laps; it is the type in general use throughout Canada.

A Dry Test of "60% Air Dry" may be obtained on ground wood or sulphite pulp.

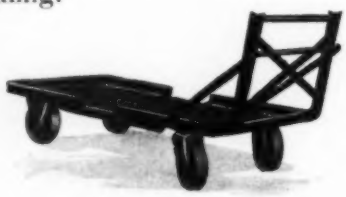
We also make Upward Pressure Presses of equal or less capacity.

PULP BALER

THIS illustration shows our Standard 100 Ton PULP BALING PRESS.

This Press is used for baling the pressed laps as they come from the pulp press above shown.

It will be noted that a scale is provided, the beam of which is set for the desired weight of pulp. This eliminates labour for weighing and extra handling.



PULP TRUCK

THE above illustration shows our Standard PULP TRUCK. This is loaded by the wet Machine tender and enters the Press — when the load has been pressed the cart is driven to baler or car — one handling of pulp is all that is necessary.

We also make the necessary Pumps, Accumulators, Valves and Fittings that go to make up a complete Hydraulic Pressing Equipment.

THE HYDRAULIC MACHINERY CO. LIMITED.

MONTREAL, QUE.

Canadian Section

program was too crowded to permit of visiting the large newsprint mills. From Grand'Mère the Governor's special train went directly to the Lake St. John district, where the distinguished visitor was the guest of Sir Wm. Price. He was everywhere given a rousing welcome by the various communities which he visited, which were all identified with the pulp and paper industry. The mills at Kenogami and Chicoutimi and the power development which is at present under way at the Grande Décharge of Lake St. John, and which will furnish more power than is at present being distributed from Niagara, were inspected.

Wherever he went the Governor, who was at one time Commander-in-Chief of the Canadian Expeditionary Force in France, reviewed the veterans of the Great War, many of whom had served under him. Among these may be mentioned Sergt. W. H. Metcalfe, V. C., M. M. and Bar, one of the 37 Canadians who have received the Victoria Cross and Captain A. J. Duchesnay who served in the original Princess Patricia Regiment. There were also numerous French-Canadian veterans who had served in the famous 22nd battalion.

Dominion Engineering to Reorganize

The Dominion Engineering Works, a subsidiary of the Dominion Bridge Co., Ltd., of Montreal, has had a most successful career since its organization in 1920. It has manufactured and installed a large amount of paper making and hydraulic machinery, all of which is giving entire satisfaction. Included in this machinery are the largest water wheels and the fastest running paper machines in the world.

To meet the increasing requirements of the business and to provide additional equipment it was necessary to make substantial extensions to the company's plant, amounting to approximately $1,500,000 which had to be paid out of the company's liquid resources, thereby absorbing almost the entire cash working capital. After due consideration, and consultation with the largest shareholders, which include some of the more important Canadian power and paper companies, the directors are recommending the reorganization on the following lines:

To form a new company of the same name with an authorized capital of $2,500,000. The present company to sell out its undertaking as a going concern to the new company for the consideration of $2,000,000, payable by the issue and allotment of 20,000 fully-paid and non-assessable shares of the par value of $100 each. To provide additional working capital the new company will offer to its shareholders rateably 4,000 common shares ($400,000) at par on the basis of one share for each five held by them in the capital stock of the new company.

New Brunswick Compensation Board and Bathurst Company Agree to Settle

The Bathurst Co. have effected an agreement with the New Brunswick Workmen's Compensation Board, whereby the litigation between the two will be abandoned. For the past six years the company has refused to pay the levies of the Board on various grounds, one of them being that the tax was exorbitant and was created by extravagance on the part of the Board. It was also contended that as the company maintained a compensation plan on its own initiative, the levies should be much lower. Litigation has been going for some years. The company won in the New Brunswick Supreme Court; but the Board appealed to the Supreme Court of Canada which reversed the decision. The company then contemplated appealing to the Privy Council at London. It was felt, however, that the expense of litigation was extremely heavy. It was therefore arranged with the board that the company would pay the amount of the first suit plus the costs for both sides, and the remaining suits would be dropped. There were six suits in all to be tried, and in addition the company had entered two counter actions.

The compensation board has been a very heavy burden to the Bathurst Company for the last ten years. It was felt, however, that with the decision of the highest Canadian tribunal in favor of the board the decision in the remaining actions would also be in favor of the board in the court of final resort in Canada.

William J. Finlay, of the Strathcona Paper Co., Strathcona, Ont., on his return from an extended tour throughout Western Ontario, reported that there is a good demand for sheathing papers, test and box boards and that his plant is busy at the present time. He was quite sanguine in regard to an early improvement in business conditions.

Good Conditions for Pulpwood Drives

Unprecedented conditions feature the 1924 stream driving season for the pulp and paper companies in Eastern Canada. In the northern section of the province of New Brunswick and parts of Quebec and Nova Scotia the snow remained in the woods exceptionally late, and consequently many of the pulpwood operators were able to transport millions of feet of pulpwood over the snow to the banks of streams and rivers for the start of the driving at about one tenth the cost that was expected.

Heavy drives are the rule this year. The Fraser Companies, with pulp mills at Chatham and Edmundston, N. B., are getting out about forty million feet for these mills, and little difficulty is being experienced in driving, the freshets which were extraordinarily heavy and caused considerable damage last year being comparatively light this year.

The Nashwaak Pulp and Paper Co. is getting out the annual spring drive on the Nashwaak River, the wood being for the mill of the company at St. John, N. B. The woodland headquarters of the company at Nashwaak are working overtime in the effort to handle the drive.

The Bathurst Co., operating a pulp and paper mill at Bathurst, N. B., are getting out about forty million feet of pulpwood on the Nepisiguit and Restigouche rivers for the Bathurst industries. They are at present employing about 1,500 men on their drives.

Reorganization of the Saguenay-Chicoutimi Group

At a meeting of creditors of the Chicoutimi Pulp Co., Ltd., in liquidation, J. E. Ardon, chief accountant of the bankrupt company, was appointed trustee, and M. S. Guimont, E. Heberer and A. M. Irving were appointed inspectors. During the meeting Senator F. L. Béique, president of the company, explained that the failure was due in part to a loss of $1,500,000 sustained through the assignment of Becker and Co., London, England, and that the failure of the Bay Sulphite Co. was another contributing cause.

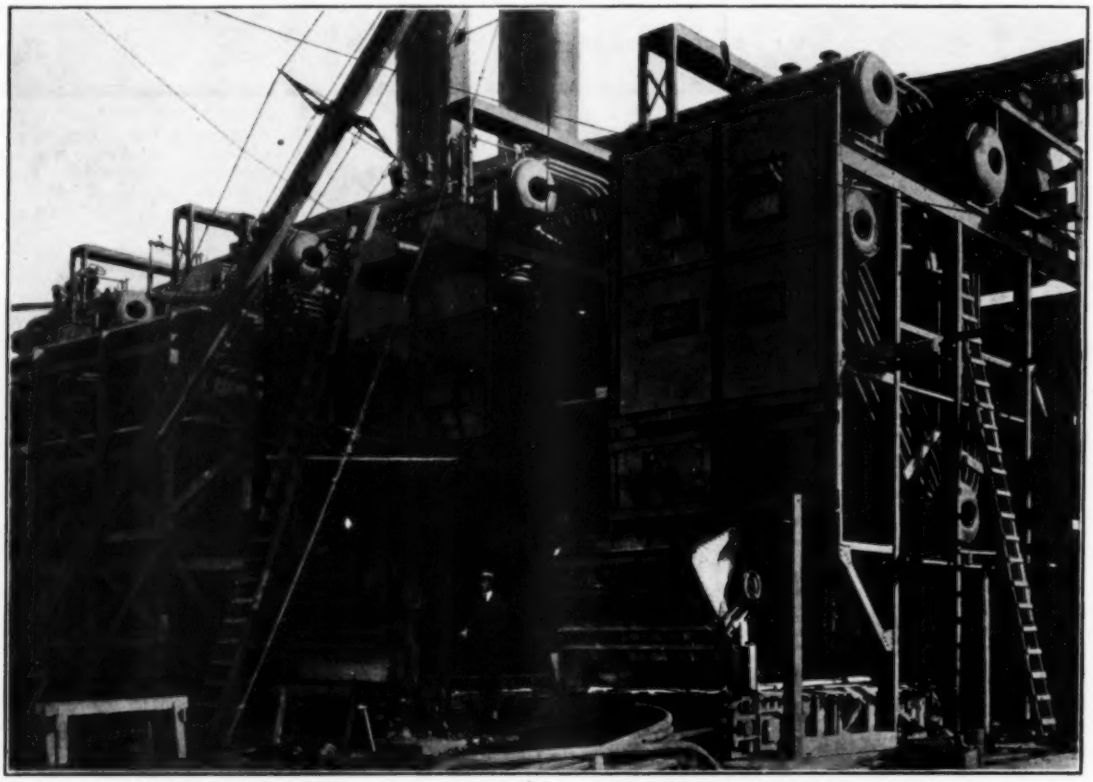
Progress is being made in connection with the reorganization of the Saguenay Pulp and Paper Co. and the Chicoutimi Pulp Co. A plan has already been submitted by Senator Béique, by which the standing would be consolidated and sufficient working capital provided to enable the company to operate at a profit. In case this plan, which is criticized on the ground that it does not provide sufficient working capital, fails to be adopted, another plan has been drawn up by a financial house and will then be submitted as an alternative. A third possibility is the purchase of the properties by Sir William Price and an amalgamation of the Bay Sulphite Co. with Saguenay. In any event, the name "Quebec Pulp Corporation" seems to be agreed on generally as the name of the reorganized concern.

Kinleith Mill to Be Scrapped

As yet the details of the scheme by which the Howard Smith Paper Mills are to take over the Kinleith paper mill have not been worked out and in the meantime the plant is operating as usual under the old management.

It is understood that the acquisition of the Kinleith mill will not mean the addition of another plant to the Howard Smith existing three mills. It is planned to scrap the Kinleith mill and divide its two paper machines and the other equipment among the other Howard Smith mills. The Kinleith mill is not a low cost mill and it is felt that greater economy would be effected by continuing to concentrate Howard Smith production in the present mills which are close to Montreal.

The Kinleith mill at St. Catharines manufactures 20 tons a day of book and writing papers, which are the same lines as are turned out at the Cornwall mill of Howard Smith. The mill was formerly owned by Sir William Gage and is now controlled by the W. J. Gage Company, Toronto, manu-



THE KIDWELL

Two flow—ring circuit water tube boiler

Typical Canadian Installation of Four Class 1817 *Kidwell* Boilers with *Coxe* Travelling Grate Stokers designed to operate at 300 per cent rating continuously.

The Kidwell Boiler Book is now ready for distribution, and is of inestimable value to everyone who operates power plant boilers.

When writing for this book, sign your name, clearly, name the concern you are with, state your position in it, and give full mailing address.

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COMBUSTION ENGINEERING CORPORATION
LIMITED
POWER PLANT EQUIPMENT

STOKERS OF ALL TYPES
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HEAD OFFICE—TORONTO VANCOUVER, MONTREAL, WINNIPEG

Canadian Section

facturing stationers, of which H. F. E. Kent is president.

It is understood that the Howard Smith Paper Mills are acquiring the property on very advantageous terms, paying for little more than goodwill. In the past they have had business connections with Kinleith to whom they supplied pulp which the latter did not manufacture.

Wage Agreement Signed at Abitibi Mill

The agreements between the Abitibi Power and Paper Co., Ltd., and the labor unions for the ensuing year have been signed. The negotiations this year differed from those of former years in that the unions and the company dealt directly and not as in former years simply as members of groups. International officers of the various unions sat at the conference with the representatives. The conferences were short and amicable.

Representatives of the unions who were in conference with the management of the company are satisfied that direct dealing between the management of the mill and the employees is the best way to discuss and to settle conditions which will bind both parties for another year. Each has a knowledge of the situation and much useless delay is avoided.

One outstanding feature of the negotiations was the formation of a federated committee of the unions. The idea of this committee is to have a regular body of representatives who are in a position to discuss with the management questions affecting all employees so that matters of general application do not need to be taken up with each union in turn. The committee is to work both ways: questions affecting the whole force may be brought to the attention of the committee by the management, or to the attention of the management by the committee.

Dawe Working for Canadian Newsprint in Australia

A. L. Dawe, manager of the Canadian Export Paper Co., is now on a visit to Australia where he is looking after business for his company in anticipation of an agreement between Australia and Canada, whereby the Australian government would extend to Canada the $15 a ton preference which is now being accorded to British newsprint and which was put into effect about two years ago. For a time Canadian companies which had been doing business in Australia absorbed the preference in the expectation that it would soon be extended to the Dominion. The negotiations for preferential agreement with Canada fell through, however, and Canadian mills formerly doing a considerable trade with Australia found their business dropped away almost to the vanishing point.

It is now believed that there is every possibility of an arrangement between Australia and Canada at an early date, particularly as the Labor Government in England has flatly refused to ratify the preference to Australia and the other Dominions which had been arranged at the recent Imperial conference.

St. Lawrence Paper Makes Bond Offering

The St. Lawrence Paper Mills, Ltd., were issuing $2,500,000 of bonds bearing six and a half percent. In July last the company started the operation of a newsprint mill at Three-Rivers, Quebec, with two newsprint machines of 75 tons daily capacity each. The first eight months' operations showed earnings, after depreciation, of $408,785, equivalent to an annual rate of $613,177 or three and three-quarters times interest requirements. As production is gradually being increased it is estimated that the annual earnings will amount to $650,000.

Provision has been made to ensure a supply of wood for sixty years. The company holds 789 square miles of leasehold timber lands in Saguenay county, Quebec, estimated to contain a minimum of 1,000,000 cords of pulpwood, which at present rate of consumption represents a forty years' supply. In addition the company has entered into a contract with John Breakey, Ltd., for a supply of 1,000,000 cords to be delivered at the rate of 50,000 cords per annum.

This year's production has already been practically disposed of under contracts to leading publishers in Canada and the United States.

War Claim by Paper Dealers

The Reparations Commission, which is investigating claims by Canadian subjects against Germany, has been sitting in Toronto under the guidance of Hon. Wm. Pugsley, of St. John, N. B. A claim was made by Barber-Ellis, Ltd., wholesale paper dealers and manufacturing stationers, Toronto, for the loss of a shipment of paper valued at £92, from the Kellner, Partington Paper and Pulp Co., Borregaard, Norway. In April, 1914, the Canadian firm had ordered a large quantity of bond parchment from the company in Norway. The paper was to be shipped by an all water route to Vancouver, B. C., the Barber-Ellis people taking delivery at Christiania. The paper arrived at that place and from there it was shipped to Antwerp, where the Belgian prize court refused to allow it to be shipped out, and two or three days later the Germans took the city of Antwerp and the shipment of paper along with it.

Commissioner Pugsley saw a difficulty in the claim inasmuch as the paper had first been seized by the Belgian prize court, although he could see no reason why the prize court should have made the seizure.

Foreign Capital Necessary

Speaking of Quebec's resources in forest and hydraulic power before the Chambre de Commerce in Montreal, Hon. Honoré Mercier, minister of lands and forests in the Quebec government, referred to the fact that at times there is criticism of the leasing of forest areas to foreign capital, and he emphasized that in a young province such as Quebec it could not be expected that there would be enough wealth to otherwise enable the development of natural resources, hence foreign capital had been a necessity, and would be for some time to come, no matter where such capital might originate.

Without foreign capital such developments as those on the St. Maurice River and on the Ottawa River would not have come, and towns such as Shawinigan Falls, Grand Mère, La Tuque, Clark City, Jonquières, etc., would not be in existence.

Price Brothers Enter Suit for $75,646

An action for $75,646.56 has just been entered by Price Bros. & Co. against the Fraser Brace Co., Ltd., Montreal, for certain goods delivered at Pitrac, Chicoutimi district, where works are being carried out by the respondent for the account of the Running Streams Commission. There was no statement available from the attorneys of the plaintiff company, besides the fact that the claim was for certain goods delivered to the respondent.

It is understood that the action has been entered to get a ruling from the courts as to how the amount claimed should be paid, as the respondent contends that the Government should pay Price Bros. directly for the account of the Running Streams Commission.

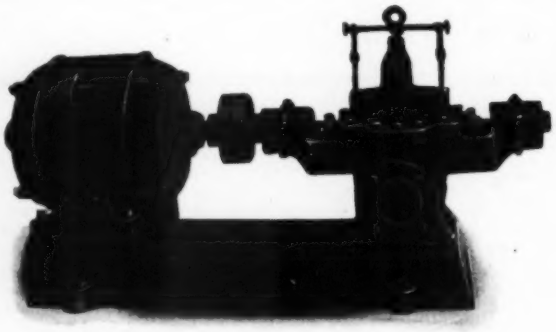
Fraser Brace state that they are not directly interested in the matter, as the action was the outcome of a dispute between Price Bros. and the Quebec Streams Commission, for whom Fraser Brace, Ltd., were acting.

N. B. Mills Go in for "Safety First"

The pulp and paper interests in eastern Canada are becoming alive to the necessity of diminishing the number of accidents. The cost of workmen's compensation is increasing yearly, and is really now far too heavy. Instead of prospects for a decrease in this cost the reverse is true. This is emphasized in the Province of New Brunswick where the cost of workmen's compensation is beyond all reason.

Failing to receive a panacea from the New Brunswick government and legislature, the pulp and paper interests in conjunction with the lumbering interests have formed an organization to combat carelessness among employees. The claims paid in medical fees, hospital fees, pensions, etc., are enormous.

Methods will be adopted whereby it is hoped to reduce the number of accidents. Co-operation with the workmen's compensation board and the factory inspectors will be arranged. W. E. Anderson, an insurance agent in St. John, N. B., who represented workmen's compensation insurance companies for several years, will act as secretary of the new association.



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Smart-Turner Improved Horizontally Split-shell Centrifugal

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Power Pumps	Centrifugal Pumps
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Pulp and Paper Mill Efficiency—

Wherever there are pulp and paper mills in Canada, there the name of Smart-Turner has come to mean reliability and freedom from mechanical difficulty.

Continuity of service and long pump-life is the proud performance of our products. We are represented throughout Canada where we can render the best merchandising service to all pulp and paper mills. Expert, experienced pump men at your call.

Truest economy comes from specifying and insisting upon Smart-Turner equipment.

SMART-TURNER MACHINE CO., Limited
HAMILTON, ONTARIO

Representatives: Vancouver, Calgary, Edmonton, Winnipeg, Toronto, Ottawa, Montreal, St. John, and Halifax (Canada)

THERE ARE no Serial Stories in this Issue, but here is a "serious" thought:

"If we do not Protect our Home Industries, there won't be any to Protect"

CAPITAL WIRES

All kinds of Paper and Pulp Mill Wire Cloth

CAPITAL WIRE CLOTH & MFG. CO., LTD.
OTTAWA, CANADA

Canadian Section

New Newsprint Machines in 1923

New machines were installed in Canadian and United States mills during 1923 with a total capacity of 1,065 tons a day. All but four, with total daily capacity of 265 tons, were installed in Canadian mills, as shown in the following table:

COMPANY	NO. OF MACHINES	MAKE	WIDTH INCHES	CAP. TONS
Fort William	2	Pusey and Jones	196	160
Washington	1	Bagley and Sewall	164	60
St. Lawrence	2	Dominion Engineering	164	120
Belgo	2	Walmsley, and Dom. Engr.	232	170
Oswegatchie	1	Bagley and Sewall	164	60
Bathurst	1	Walmsley	160	50
Algonquin	1	Bagley and Sewall	204	80
Consolidated	1	Beloit	160	65
Kenora	1	Dominion Engineering	234	100
Price Bros.	1	Walmsley	234	100
Donnacona	1	Walmsley	234	100
TOTAL				1,065

Eddy to Enjoy Fixed Assessment for Ten Years

The City Council of Hull, Quebec, unanimously voted to grant the E. B. Eddy Co., Ltd., a fixed assessment for all its properties of $4,000,000 for a period of 10 years, from May 1, 1922. As a result the company has agreed to make improvements to its plant which will cost between one and three million dollars.

Recently, rumors were current to the effect that the Eddy Company would move its match factory, the largest in the world, from Hull to Deseronto, Ont., where they already have an affiliated plant owned by the Diamond Match Co. A portion of the Hull plant was closed down on account of the dispute with the city over the assessment of the property for municipal taxation purposes, and it was said that the plan to move down to Deseronto was in the nature of an ultimatum to the Hull municipal authorities. Now that the dispute has been settled amicably, the Hull plant will doubtless be shortly reopened.

Kraft Dumping from Canada Charges Groundless

The Customs Service of the Treasury Department at Washington has investigated charges to the effect that Kraft wrapping paper from Canada was being dumped in the United States, and could find no proof to substantiate them, as evidenced by a letter from Assistant Secretary of the Treasury Moss to the collector of customs at Cleveland:

"It appears from evidence submitted by the importing companies that the purchase represented by these importations were isolated transactions, made necessary because the domestic concerns which had been supplying them had to refuse or reduce their orders as its production was not equal to the demand and that no such purchases have since been made.

"In these circumstances I cannot find that the domestic industry has been injured within the intent of the Anti-Dumping Act by these importations. Appraisement reports need no longer be withheld so far as any question of dumping is concerned."

Status of the Riordon Companies

In a communication from the Riordon Sales Corporation, Inc., Montreal, it is stated that in order to prevent any misunderstanding with reference to the legal formalities that may at any time take place in connection with the liquidation of Riordon Sales Company, Ltd., and Riordon Company, Ltd., that these proceedings have no effect whatever on operations of Riordon Sales Corporation, Ltd., and Riordon Pulp Corporation, Ltd.

It is further stated that as "some misapprehension might arise due to the similarity of these names, we wish you to be definitely assured that the operation of the Kipawa and Hawkesbury mills by Riordon Pulp Corporation, Ltd., and the sale of their product by Riordon Sales Corporation, Ltd., will not be in any way affected by these proceedings. These corporations will continue without any interruption to produce, sell, and ship bleached sulphite from Kipawa and Hawkesbury as they have for many months past."

Growth of Canadian Exports to the U. S.

The Canadian trade returns for March demonstrate the rapid growth in exports of pulp and paper to the United States. During the year ended March 31st the value of these combined exports was $143,131,000, an increase of $20,600,000 over those for the previous year. The increase in the case of woodpulp exports represents only a little over $3,200,000; but in the case of paper products it was $17,390,000, which was accounted for in great part by increased newsprint exports.

During the fiscal year ended March 31st, 1919, these combined exports were valued at only $73,321,000, so that the increase during the five-year period has been nearly 100 percent.

Exports of pulp, paper and pulpwood have done much to keep down the rate of exchange against Canada in favor of the United States; while the premium on American funds alone during the past year has probably been worth about $2,000,000 to Canadian mills.

Fifty Lumberjacks Held by Log Jam

Unusual weather conditions are believed to be the cause of a jam of 30,000,000 feet of pulpwood and saw timber which occurred on the upper Gatineau river and completely cut off fifty lumberjacks. Slow melting of the snow in the woods had prevented the usual rush of water, and the log drive got stranded on shallows in the upper river. The lumberjacks who were stranded behind the jam could not get out till the jam was broken, as the ground in the woods was so soaked with water as to make traveling a virtual impossibility.

Fear was entertained that the men would run short of provisions, and an airplane of the Laurentide Air Service was sent out to locate the men and bring them enough supplies to last a short time. The next day the cockpit of the flying boat was filled with provisions; but when it reached the Catineau it was found that heavy rains had broken up the jam and that the drive was under way.

Persistent Merger Rumors

Again the rumor has been revived of a merger between the Spanish River Pulp and Paper Mills and the Abitibi Power and Paper Co. It is declared that some progress has been made and that tentative papers are understood to be in the hands of the Spanish River lawyers at the present time for consideration.

Naturally no details are available, but it is learned in circles which should be in possession of the information that Abitibi would enter more or less on the terms recently outlined, which places substantial value on Abitibi's unique position regarding extensive limits and low costs of production, and accepts Spanish largely on the grounds of its extremely liquid position which, without a merger, it will take Abitibi a year or two to reach. Unless Abitibi's basic position is admitted, the control of the company is likely to refuse to continue negotiations.

Dodge to Inspect International's Canadian Property

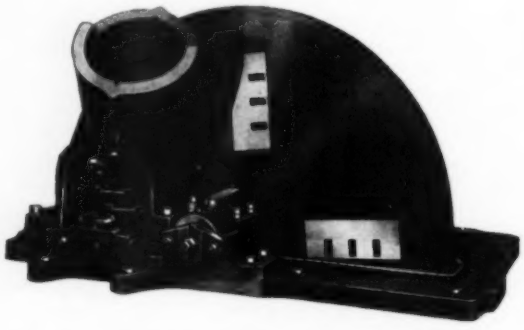
Philip T. Dodge, president of the International Paper Co., is expected in Eastern Canada from New York to inspect sites for the proposed International Paper Mill on the upper St. John River or nearby. It is also expected that he will supervise the enlargement of the company's mill at Three-Rivers, the production of which is to be increased from 300 tons to 500 tons a day.

Another item of business that will occupy the attention of the International Paper's head is the dispute with the New Brunswick Government over the revocation of the water power rights and leases at Grand Falls, N. B. The New Brunswick Government has asked the company to file a claim for damages, as the spokesmen for the government have reiterated their intention to develop the Grand Falls power possibilities under government direction.

R. M. MacLean, advertising manager of the Howard Smith Paper Mills, Ltd., has been elected a director of the Montreal Publicity Association.

CARTHAGE

The Carthage Line of Pulp, Paper and Bag Mill Machinery Represents the Best

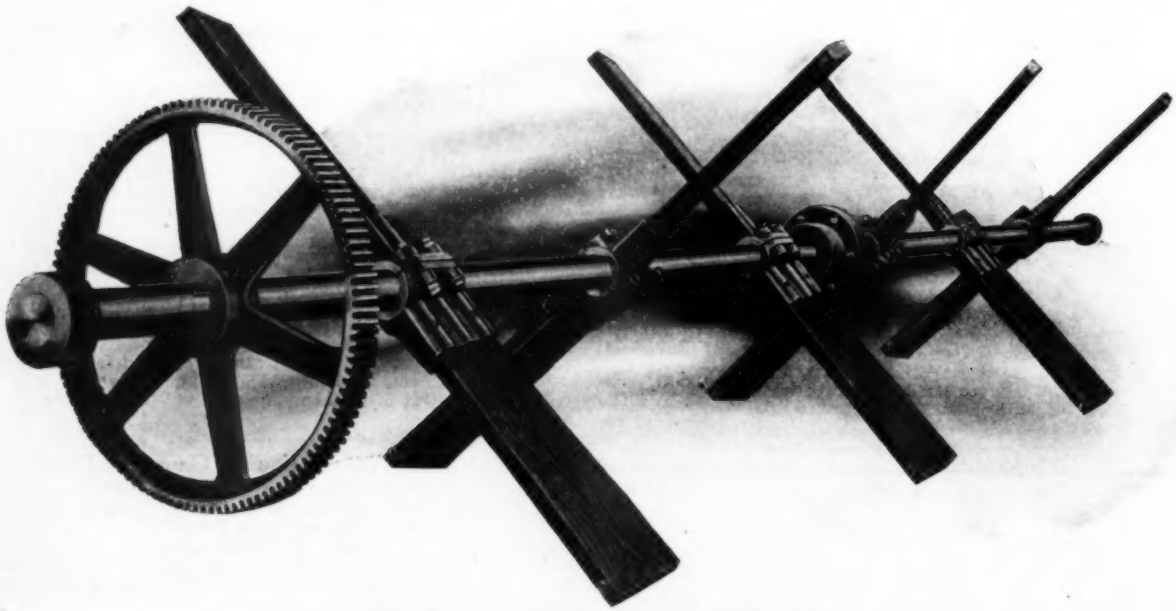


YOU will profit by our long experience in the manufacturing of our products.

Barkers, Chippers, Grinders, Shredders, Wood Washers, Chip Screens, Wet Machines, Pumps, Blow-off Valves, Agitators, Acid-proof Bronze, Brass and Lead Fittings.

CARTHAGE MACHINE CO.

Carthage, N. Y., U. S. A. Belleville, Ont., Canada



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WE ARE specialists in the building of agitator equipment for paper mills, building wooden chests of Cypress or Hard Pine either vertical or horizontal in many different types to suit particular conditions. Agitator equipment for concrete chests forms a large part of our business. Let us quote on your specifications.

THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y., U. S. A.

Canadian Builders: Port Arthur Shipbuilding Co., Ltd., Port Arthur, Ontario

Secretary S. J. Frame, of the Canadian Paper Box Manufacturers' Association, has sent out notices for the annual meeting of the organization to be held at the Chateau Laurier, Ottawa, on Monday and Tuesday, June 23 and 24. Arrangements are already well under way to make the convention the biggest and most interesting the organization has yet held.

Protest Against Sunday Work

In all the Roman Catholic churches of Three-Rivers and Cap de la Madeleine there was recently read an energetic protest against work on Sunday in the pulp and paper industries. The protest comes after an answer made by the industries to the Three-Rivers City Council to the effect that it would be quite impossible to stop work at midnight on Saturday to resume only on Monday morning. The protest has been signed by the vicars of all the churches in Three-Rivers and the Cap.

The substance of the protest is that work on Sunday is contrary to God's Church and State laws, as well as to the dignity of the workmen.

Power Development at the Nipigon Plant

The opening of a third generating unit by the end of this month, and of a fourth by the end of August is the schedule which the Ontario Hydro-Electric Power Commission hopes to fulfill at the Nipigon plant. By that time the plant will be delivering 50,000 horsepower, a considerable amount of which will be absorbed by pulp and paper mills, and will be earning all its charges save depreciation and sinking fund.

Sir Adam Beck, head of the Commission, emphasized recently in Chicago that the surplus of $170,000 which he had recently announced during the past six months by the Niagara system, was an absolute surplus, computed after interest, sinking fund, depreciation and contingency fund charges had all been met.

Newsprint Mill for Manitoba

Word has been received that a large newsprint mill will be built at Pine Falls, Man., by J. D. McArthur & Co., of Winnipeg, and that the amount spent in actual construction will be in the neighborhood of $5,000,000. The plant site is about three miles from Pine Falls and the original plans have been altered to increase the daily capacity to about 200 to 250 tons daily. The whole project had been temporarily held up until railway facilities were assured.

Following the announcement from Ottawa of the contemplated construction of the Canadian National Railways' branch from East Selkirk to Pine Falls, the work is likely to be proceeded with, all difficulties having been overcome.

Mattagami Mill Operating at Full Capacity

F. C. Clarke, of Toronto, who is treasurer for the receiver of the Mattagami Pulp and Paper Co., Smooth Rock Falls, Ont., recently paid a visit to the plant, and reports that the company has been operating at full capacity since the first of the year and is turning out about 4,000 tons of unbleached sulphite monthly. The conditions at the mill are generally good and there has been no power trouble to speak of.

The company hopes to drive its wood down the Mattagami river without any trouble, as the weather conditions have been quite favorable on the whole. It is getting about 40,000 cords from its own limits and about 10,000 cords from settlers. While the market for bleached sulphite is weak in Canada, the company is disposing of its product chiefly across the line.

Loading Pulpwood Efficiently

The Abitibi Power and Transportation Co., Iroquois Falls, Ont., formerly had two mechanical loaders for loading pulpwood logs on cars, one of them working two shifts a day and the second one working one shift. This arrangement required the labor of forty-six men, and about twenty-seven cars of pulpwood could be loaded daily, at a total cost of $1.05 a cord.

Now a gasoline, crawler type crane, equipped with a log grapple is being used instead of the two loaders, with the result that working one shift per day and with a force of five men, car loadings average twenty-six a day. The actual loading come to 19 cents a cord, and the service of the switching engine and crew brings the total cost to 20 cents a cord, which is less than one-fifth what it used to be with the mechanical loaders.

The Gold Brick Won't Stand Fire

There is a definite standard of fire brick value; it is not the cost per thousand brick because:

1st. All fire brick at a given cost have not the same production value. One will produce more than another: therefore

2nd. The actual standard is what a brick will do for each dollar—how many tons' production per lining, or how many months between replacements per dollar of first cost.

We are prepared to show you the results of exhaustive tests in actual service

Buy Elk value in fire brick

ELK FIRE BRICK CO.

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IN CANADA:
ELK FIRE BRICK CO. OF CANADA, LIMITED
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Cheap lockers are not really cheap—they only look that way—Dennisteel is truly economical.

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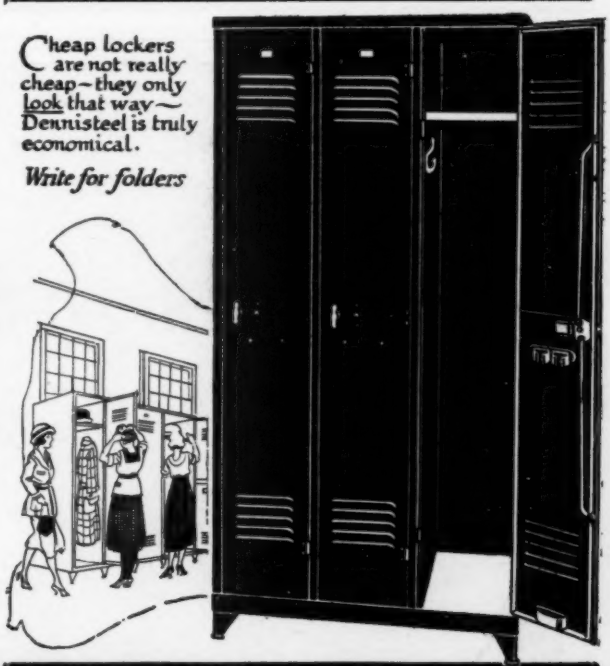
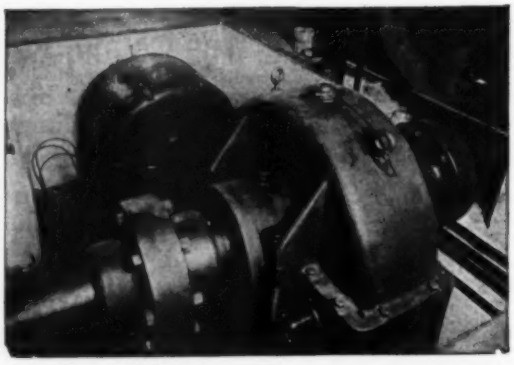


DENNISTEEL LOCKERS

THE DENNIS WIRE AND IRON WORKS CO. LIMITED
LONDON CANADA

FEWER PARTS—LESS WEAR



Cleveland Worm Gear Reduction Unit applied to Mill Line Shaft. 400 H.P. 1200 R.P.M. Reduction in Worm Drive 14⅔ to 1

Over 12 years devoted to the manufacture of Worm Gear Speed Reducers exclusively, qualify us to assist you in your problems.

Fewer Parts mean Less Wear—Less Wear means Longer Life, Less Noise, Increased Operating Efficiency and Lower Maintenance Cost.

Compare the 2 Gears and 1 Point of Contact of a Cleveland with the multiple gears and points of contact of other gear reducers.

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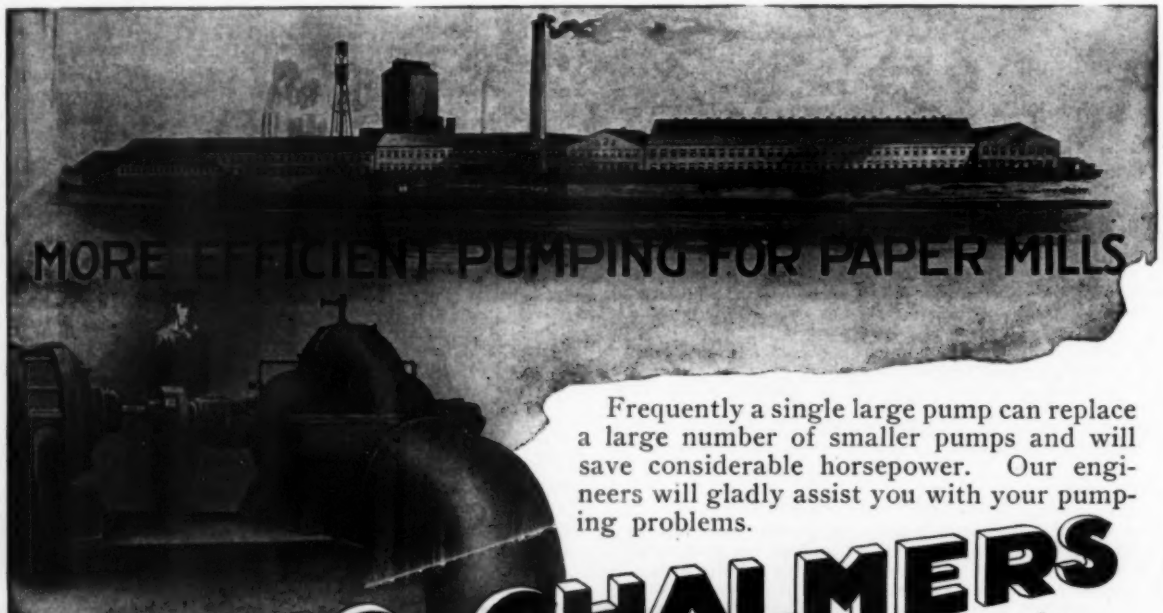
There is a Cleveland Representative near you.
You may have a catalog on request.

The Cleveland Worm & Gear Co.
East 40th Street Cleveland, Ohio
"America's Pioneers in Worm Gearing"



Frequently a single large pump can replace a large number of smaller pumps and will save considerable horsepower. Our engineers will gladly assist you with your pumping problems.

ALLIS-CHALMERS

MILWAUKEE, WIS. U.S.A.

Artificial Silk Manufacturers to Build in Canada

Contracts have been let by Courtaulds, Ltd., of London and Coventry, England, for the construction of their Canadian plant at Cornwall. The successful contractors are The Foundation Co., Ltd., for the general contract, and Canadian Vickers, Ltd., for the steel work. The fabrication of steel work is under way and the whole work will commence as soon as contractors can land their plant on the site.

Courtaulds, Ltd., are one of the largest artificial silk manufacturers in the world, and the new plant will consume an appreciable amount of high grade chemical pulp.

The Glengarry Pulp Co., Cornwall, Ont., of which W. W. Thomson is the owner, recently made an assignment to F. C. Clarkson, Toronto. The plant was equipped with four grinders, five wet machines and has a capacity of forty tons of mechanical pulp daily.

Riordon Operating at a Profit

Since the appointment in the Canadian courts last November of a liquidator for the Riordon Co., Ltd., the conduct of the business has been continued, with the approval of the court, under the arrangements previously in effect, by which the operations are subject to the supervision of the bondholders' committee.

While at the present time the demand for bleached sulphite does not equal the supply, supplemented as it is by increased importations from Europe into the United States, the Riordon properties continue to show an operating profit.

Pulp and Paper Mill Accessories, Ltd., have found it necessary to have larger offices and warehouse space and have moved to 240 Craig St., W., Montreal, where they are now located. This firm in addition to handling wires, pulp stones, digester linings, and other supplies for pulp and paper mills, is the representative of the P. A. P. A. screens and the Ljungstrom air preheater for recovering waste heat from flue gases and returning it to the furnace.

Honoring the Inventor of Groundwood

Charles Fenerty, who is believed to be the first man to have produced mechanical pulp from spruce, formerly lived in Sackville, N. B. He experimented for many years until his efforts were crowned with success.

In honor of his discovery it has been arranged to install a bronze tablet in his former home at Sackville. Historical organizations are in control of arrangements.

The Nova Scotia Power Commission has awarded two contracts for work at the hydro development at Ruth Falls on the East River at Sheet Harbor, where it is expected to produce 22,000,000 kilowatt hours per year. William Cooke of North Sydney was awarded the contract for the construction of the concrete dam, and E. F. Powers Construction Co. of St. John and Reid Farnsworth and Shaffner Co. of Halifax obtained the contract for the mile and half long concrete-lined canal. The development is being undertaken in connection which the new mill of the Albany Perforated Wrapping Paper Co. which is in the course of construction at Sheet Harbor.

Selling Newsprint Below Cost

Canada uses 125,000 tons of newsprint in a year, and of this amount 13,000 tons, or about 10 percent, is used by one paper, while another organization uses about the same amount for an affiliated group of papers. The newsprint used by this newspaper cost in round numbers about $1,000,000 last year, which was more than the revenue received by this publication for the sale of all its issues.

It is estimated that a loss of about $1,000 a day was sustained through the sale of raw paper, which, of course, was much more than made up through advertising revenue.

In the course of a dinner celebrating the fifth anniversary of the Garden City Press, publishers of Pulp and Paper Magazine of Canada, the growth of the plant was reviewed by President J. J. Harpell, and two of the staff were recipients of presentations upon leaving. Miss C. E. Knox, treasurer and head of the clerical staff, who is leaving for a prolonged stay at her home in Ireland, was presented with a black walrus leather lady's suit case handsomely fitted with dressing table accessories; and Mr. Louis Even, foreman of the typesetting department, who is leaving to take up work in Montreal, received a case of silver, and bouquet for Mrs. Even.

Paper Board Company Makes Bond Offering

The Canadian Paper Board Co., of which J. G. G. Kerry, Toronto, is president, is the largest manufacturer in Canada of paper board. A first mortgage bond issue of $200,000 is being offered by the company to yield seven percent interest and the issue is being rapidly taken up. It is secured by assets three and a half times the outstanding amount and the earnings of the company run nearly four times the interest requirements.

The company has plants at Frankford and at Campbellford, Ont., and at Montreal, Quebec.

The Canada Paper Co., Ltd., with mills at Windsor Mills, P. Q., had a successful business year according to reports presented at the annual meeting. Joseph Kilgour, of Toronto, was re-elected president, C. R. Hosmer, of Montreal, vice-president, and H. M. Thorn, secretary-treasurer. The directors are Sir Montagu Allan, F. W. Molson and F. C. Campbell. It was recalled at the annual meeting that F. C. Campbell, manager, H. B. Donovan, sales manager, H. M. Thorn, secretary-treasurer, and W. E. Young, accountant at the Toronto office, have been in the service of the company for periods varying from forty to forty-five years.

The Canadian Barking Drum Co., Toronto, have lately sold six of their barking drums for installation in the large pulp and paper plant which the British and Newfoundland Governments are building at Corner Brook, Newfoundland. They also recently received an order for the installation of a 10 x 30-foot drum for Price Bros. & Co. at Montmagny, P. Q., and they have a drum under construction for a pulp and paper company at Velson, Holland. In the United States two drums are being installed at the rossing plant of the Hanna Paper Corporation, Waddington, N. Y.

Belgo Earnings High

For the six months ended December 31st last Belgo Canadian Paper showed operating earnings before interest and depreciation of $1,275,000. Interest, depreciation and preferred dividends absorbed $622,000, leaving net of $653,000 available for the half year on the $8,500,000 outstanding common stock.

Earnings for the full year will be somewhat in excess of the showing made for the first half. January and February were about up to the previous average, as a new machine was being installed and tuned up, with consequent costs charged to operations. March, however, established a record, and this was again eclipsed in April. May output indicates maintenance of the recent earning level.

When the governor of the steam engine operating one of the paper machines at the Abitibi mill at Iroquois Falls, Ont., stuck, the machine was partially wrecked, heavy material loss was incurred and a number of men were temporarily thrown out of employment. No one was injured in the accident although operations had to be suspended for a time.

Forest Products Laboratory Installing Digester

A new digester is being installed at the Forest Products Laboratories of Canada. This will be used for sulphite and will have a capacity of 50 pounds of air dry stock.

Recently at this laboratory some straw wrapping paper was made by a modified sulphite process, which had a very creditable appearance and suggests a promising line of progress.

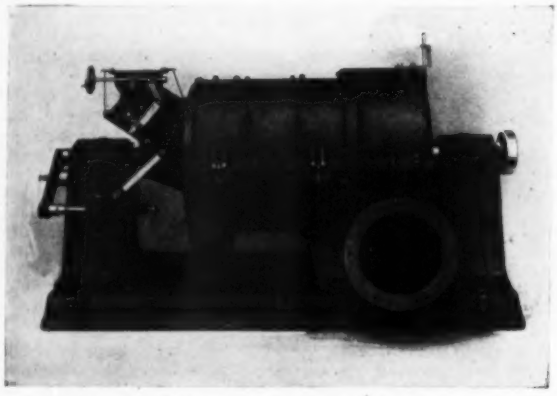
J. Kellatt, who for the past seven years has been a member of the accounting staff of the head office of the Provincial Paper Mills Co., Ltd., in Toronto, has severed his connection with the organization and has left for California. Before his departure Mr. Kellatt was waited on by the office force and presented with a club bag and traveling case, the presentation being made by T. A. Weldon, vice-president of the company.

Another Pulp Mill for New Brunswick

The Ritchie interests of Newcastle, N. B., who have maintained a lumber mill at Newcastle for more than half a century, may build a pulp mill in conjunction with the lumbering interests. For some years the company has been cutting pulpwood.

The mill may be started this year on a site adjacent to the company's sawmill. The Ritchies own large tracts of pulp-

For Lower Fuel Costs



consider the advantages of pulverized coal—proved to give highest heat efficiency, more flexible control and greater capacity from even the lowest grade coals.

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makes available these advantages to practically every plant, large or small, old or new. The simplicity of the apparatus, its compactness and practically automatic operation call for a full investigation. Write today.

We also manufacture Erie City Vertical and Horizontal Water Tube, Horizontal Tubular and "Economic" Boilers, and Erie City Pulverized Coal Apparatus.
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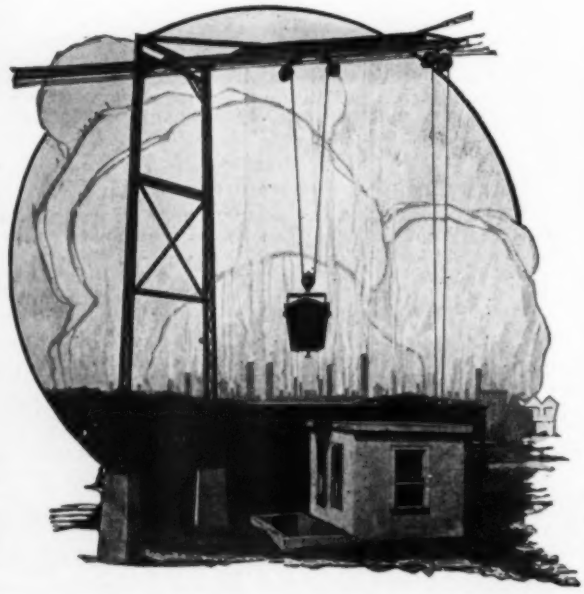

Can You Unload Your Coal For Five Cents A Ton?

If you can't you are losing the difference on every carload you handle. Figure what this amounts to on your annual tonnage and you will quickly see the advantage of installing a **Godfrey Conveyor** at your plant.

The **Godfrey System** unloads coal and similar materials and conveys them to outside storage or to any point within the plant at a cost of from three to seven cents a ton, depending entirely upon the distance carried. One man does all the work.

We can cite you to a number of installations of our equipment in the paper and pulp industry and it will pay you to make an investigation.

Ask for Bulletin A-1

Godfrey Conveyor Company
ELKHART, INDIANA

Godfrey CONVEYORS

wood land along the Miramichi river and tributaries. If the mill is built shipping piers will also be constructed as the mill will be located near the Gulf of St. Lawrence, at the mouth of the Miramichi river.

Port Alice Mill May Reopen

The Port Alice Mill of the Whalen Pulp and Paper Co., Ltd., which has been closed since the beginning of March, may be opened up again within the next few weeks. This plant, which shipped most of its pulp to Japan, found such a demoralization of the Oriental market consequent to the drop in the purchasing value of the yen after the earthquake, that it was decided to close for a month or two pending a stabilization of conditions there. Upwards of 350 workmen were employed.

The Mill Creek and Swanson Bay mills have been running continuously, and G. F. Gyles, deputy receiver for the company, states that it is expected the Port Alice mill may be in full operation possibly before the end of the present month.

Convention of Waxed Paper Salesmen

An enthusiastic meeting of the salesmen of the British American Wax Paper Co., Ltd., Toronto, and of The Dominion Sales Book Co., Ltd., Hamilton, Ont., was held in Hamilton recently. These two companies are owned and controlled by the Consolidated Sales Box and Wax Paper Co., Ltd. The president, L. M. Appleford, and the directors were on hand to welcome the salesmen.

The staff covers the entire Dominion from the Atlantic to the Pacific. The sales manager, C. P. McGregor, congratulated the men on the business they are sending in and expressed strong confidence that the present year would prove a record one for both companies.

Lennox Mill in Liquidation

The Lennox Paper Mills at Camden East, Ont., which ceased operations some little time ago, has gone into liquidation with Gordon W. Scott, of Montreal, as custodian. The company, which manufactured book, bond and news, had been operating under difficulties for some time and at one time it was thought the institution would pull through without going into liquidation.

It is thought that it will be only a question of a short time before the mill is again in operation as it is known that a number of men representing various paper industries have been looking over the plant with a view to lease or purchase.

Fraser Mill at Chatham Resumes Operations

The Fraser Companies' pulp mill at Chatham, N. B., which has been closed pending renovation of the equipment and installation of a power plant, reopened about the middle of last month.

Previous to the shutdown the plant had obtained its power from the Bathurst company's development at Great Falls on the Nepisiguit river. When the latter declared they required all their power for their own mills the Fraser Companies installed their own power plant.

No Summer Meeting for Technical Section

In view of the negligible response to suggestions for the Summer Meeting of the Technical Section of the Canadian Pulp and Paper Association at either Fort William or Toronto, which it was proposed be held in June, it was decided not to proceed with the proposal.

It has been suggested, however, that possibly something might be done in the way of a fall meeting in September.

London Plant Rebuilt

Reid Brothers Co., London, Ont., whose large factory was burned down some months ago, have rebuilt their plant and are now occupying their new premises which cover an area of 30,000 feet and are equipped with the most modern conveniences. All the machines are run by individual motors and safety devices are installed throughout the whole building.

The company have many activities and manufacture paper bags, paper boxes, loose leaf sheets, etc., as well as do printing, book binding, etc. A wholesale business is also conducted in paper of various lines, twines, paper bags, etc.

J. P. V. Fagan, formerly with the Brown Company at their Burgess mill, Berlin, N. H., has joined the staff of the Spanish River Pulp and Paper Mills Co., Ltd.

W. H. Langlois Home After Extended Trip

W. H. Langlois, of Kilgour Bros., Ltd., Toronto, who has been abroad for about a year, has returned to his desk after many travels. Mr. Langlois, who grew up with the Kilgour business, was accompanied on his trip by his wife and son. Most of the time was spent in China where Mr. Langlois has a daughter engaged in missionary work. He also visited the Malay Peninsula, Ceylon and other eastern countries, and on the way back stopped in England where he visited the British Empire Exhibition at Wembley, which was then in the making.

Mr. Langlois stated that while he found no paper mills in China he was given to understand that there were some there, although the Chinese are not heavy consumers of paper.

According to a Winnipeg dispatch the Seaman paper interests of Chicago have been negotiating for large pulpwood berths between Lake Winnipeg and Lake Manitoba. It has also been reported that J. D. McArthur interests have been seeking additional limits on the west side of Lake Winnipeg. In both cases, however, it is understood that deals have not yet been consummated.

Canadian Newsprint Operations Profit United States Companies

The part played by the Canadian newsprint industry and its importance to the United States was clearly brought out by the annual financial statement of the Union Bag and Paper Corporation, recently made public. Of the $6.34 a share earned by Union Bag and subsidiaries in 1923 on the $14,977,850 capital stock, $2.84 a share was profit from Union Bag's operation and the remainder, $.50 a share, was derived from the company's holdings of St. Maurice Paper Co., Ltd., of Canada, in which it has a 63 percent interest.

Other large American companies, including International Paper, have Canadian subsidiaries.

Pulp and Paper Congress

The first annual congress of the Federation of Pulp and Paper Mill Employees will be held in Chicoutimi, P. Q., on the first of August. This Congress will be very important and will be attended by representatives from Ontario and Quebec.

One of the important matters to be taken up will be Sunday work, which is said to be carried on in certain mills.

George F. Steele, who formerly conducted the Newsprint Paper Corporation, a combination of Scandinavian newsprint mills, and was at one time general manager of the Canadian Export Paper Co., has been appointed distributing agent of the Powell River Paper Co., Powell River, B. C. Mr. Steele, who knows paper making in all its phases and has a remarkably wide acquaintance among newspaper publishers, has his offices in the Aeolian Building, 33 West Forty-second St., New York City.

On his return to Lachute, Quebec, after a visit to the Pacific Coast, J. T. Ayers, president of Ayers, Ltd., manufacturers of pulp and paper makers' felts, Lachute Mills, P. Q., was warmly welcomed back by the staffs of the office and mill, numbering over 350. In his home there had been installed a grandfather's clock, with engraved plate, the presentation being made in honor of his birthday anniversary and in recognition of his constant solicitude for the welfare of his employees.

The recent announcement that the St. Regis Paper Co. had decided not to proceed with its plan to erect a newsprint mill in this country is undeniably accompanied by a feeling of relief on the part of manufacturers and those who hold paper securities. The more decisions of this nature there are at the present time, the sounder will be the Canadian newsprint situation.

Charles W. Cox & Co., Ltd., has been organized at Port Arthur, Ont., and has been granted a Dominion Charter authorizing the company to engage in business as timber and pulpwood operators. The capital stock is placed at $100,000 and the provisional directors are Charles W. Cox, D. J. Cowan and Oscar Styft, all of Port Arthur.

The Don Valley Paper Mills, Toronto, are operating to capacity at the present time on cover, index bristols, tag manilas and other lines.

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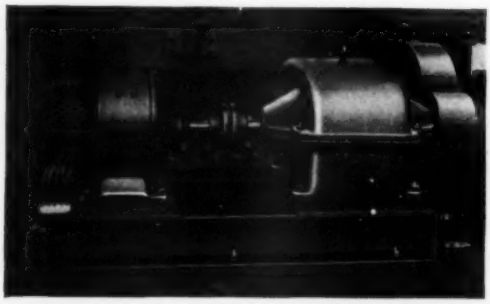

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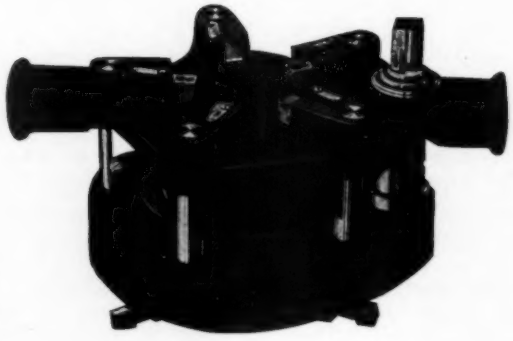

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High Speed News Print Machines*

By R. J. NEESE
Beloit Iron Works

WE HAVE a strong force of engineers who are devoting practically all of their time to the development of improvements in design and construction of paper making machines and we will endeavor in this talk to describe as clearly as we can just what these improvements are and what benefits should result from their use in the hands of competent men.

We are not in any way presuming to criticize any of the machinery built by our competitors, nor are we attempting to tell you gentlemen how to make paper at high speed but are confining our remarks to the subject assigned to us; namely, "High Speed News Print Machines as built by our company."

Within the recollection of most of you, three hundred and fifty to four hundred feet per minute was considered high speed and one hundred and fifty inches width of machine was considered a very wide machine. The step from four hundred to six hundred feet per minute was a very important step and it involved quite a large number of changes and improvements in the design and construction of the machines to make them equal to this additional duty. The step from six hundred to seven hundred and fifty feet per minute was even more important and called for a higher grade of workmanship and materials, but no radical or fundamental changes were made. It was found when stepping up beyond seven hundred and fifty feet per minute a very different problem confronted the machine builders.

Problems wth Increased Speed

In the first place, all the running parts of the machine had to be given a running or dynamic balance, whereas heretofore, only a standing or static balance was required. For the purpose of giving the large heavy running parts a running balance, it was necessary for the machine builder to devise means for finding the points at which such parts were out of balance and also means for measuring the amounts of weights and the exact spot in which such weights had to be applied in order to give the perfectly smooth running that was necessary.

Another important question was to determine the proper length of wire and the proper elevation of the breast roll, also the question of whether or not a shake was necessary and to what extent.

The Eibel patent was hailed as the solution and most of the mills and machine builders tried to apply this theory as a means of increasing the speed and whether or not the elevation of the breast roll actually did contribute to the betterment of the sheet or substantially assist in increasing the speed, is now a question. The opposite theory of a high slice carrying a high head producing the same effect by means of hydraulic pressure to give the stock the same speed as the wire, was advanced and has been very successfully used in a great many instances and we are now inclined to believe that the high slice is the proper way to accomplish this purpose. It is our opinion that the best results are obtained when the stock coming from under the slice arrives on the wire while traveling at the same speed as the wire and with a high slice, and by close attention of the operator it is possible to attain this much desired effect by juggling the height of the pond back of the slice.

Another serious question was how to prolong the life of wires at the higher speeds. Much credit must be given to the wire makers for having intelligently studied this problem and having greatly improved it, and we believe are well on the way toward finding a way to weave wires and make the seam such as to give excellent results.

Then comes the question of the effect of the various rolls and suction boxes over which the wire travels, on the life of the wire. About twenty years ago we began putting roller bearings on our breast rolls and in most cases with very good success. The idea being to reduce the friction and consequent wear on the wire which drives the breast roll. Some years ago we tried a scheme for the late Mr. Peter Thom of the Kimberly-Clark Company, for driving the table rolls and the breast roll but this did not work out and finally in the last five or six years the ball bearing makers have pushed their propaganda forward to such an extent that a great many machines have been equipped with ball or roller bearings. In most cases, if properly housed and mounted so as to keep in the lubricant and keep out water and foreign material, these have given fairly good results, but we do not believe this problem is completely solved; there is yet much room for improvement, particularly where there is a shake on the machine.

Back in 1916 we installed a machine at Brainerd, Minnesota, which was intended to run without a shake but a shake was supplied as a matter of precaution. We also equipped that machine with a high slice. We put on three kinds of bearings on the table rolls, some were equipped with Timken roller bearings, others with the Grindstone type of bearing and others with the old standard plain bearings. Our experience proved that our way of mounting the Timken bearings was such as to give them a fair chance and they stood up and have given excellent satisfaction; all of them being still in use so far as we know.

It was found that the wire would wear grooves in the suction box covers, making it necessary to replane the covers frequently and many wires were spoiled. An old paper maker, Louis F. Jurgeson of Grand Rapids, Minnesota, conceived an idea and had it patented covering a means of oscillating the suction boxes. We were taken with this idea and purchased the patent and for the past ten years we have been equipping most all of our machines with the suction box oscillating device. This mechanism keeps all the suction boxes moving under the wire theoretically pivoted in the center of the machine, the ends moving lengthwise of the travel of the wire. Half of the suction boxes would move in one direction while the other half moved in the opposite direction and this had the effect of keeping the suction box covers smooth and glassy; avoided the grooves, decreased the amount of planing, lengthened the life of wires and this has been considered a very valuable feature. It is a part of our standard equipment on a paper machine.

The old guard board and top couch jacket were sources of trouble and annoyance to the paper maker and it was felt by many the cause of a great many breaks. The Millspaugh suction roll was applied and this had the effect of decreasing breaks at this point. This same condition applied to the press. We are not yet convinced that the suction press is a necessity, but we believe that conditions vary in different mills and will not attempt to discuss this question.

The handling of the sheet at high speed was a serious one because above six hundred and fifty feet it was very difficult for a backtender to pass the paper by hand and the industry is indebted to the late Mr. Pope for his contribution of air for this purpose. This has worked out very satisfactory. Also the Sheahan rope carrier which applied to the dryer section automatically takes the paper through the dryers and we are of the opinion through experience, that even if the machine is equipped with air, it should also be equipped with the Sheahan rope carrier for reason that the ropes carry the end through the dryers taut and no time is lost waiting for the slack to be taken up.

We are also indebted to Mr. Warren for the improved calender doctors which are a great improvement over the old type, especially on high speed.

The Pope automatic reel has also been of valuable assistance and under the present arrangements for the use of air, it can be used on a machine where the air is used and the royalty paid for the use of the air, but being tied up with the air makes it necessary for a mill to pay the Pope royalty per ton in order to have the benefit of the Pope reel which we consider is unfortunate as otherwise a great many more of these reels could be used.

The winder has had to be strengthened and improved in details because it has to run at two thousand five hundred to three thousand feet per minute on a news machine which is making paper at approximately one thousand feet, which calls for the utmost care in designing and building the winders.

Now we will endeavor to give you an idea of the most important features of our latest high speed machines.

Removable Fourdrinier Part

First, realizing the loss of time and production, also the tremendous manual labor involved in practically wrecking the Fourdrinier part every time a new wire is put on, we finally worked out and built what we term the Removable Fourdrinier part which operates as follows: There are, say, three tracks set up on stands in front of the machine and the table of the Fourdrinier consisting of the side rails which support the table roll bearings and the rolls, also the suction boxes and breast roll is provided with wheels which operate on these tracks. The wheels are connected by a longitudinal shaft which is geared to a motor. The motor being completely enclosed Navy type, which the moisture does not affect. When the old wire is removed you push the button and the wire table of the Fourdrinier rolls out on these tracks into the aisle in front of the machine in one unit. This table carrying

*Presented at the meeting of the Newsprint Division of the Superintendents' Association, at the Manchester Hotel, Middletown, Ohio, during the Fifth Annual Convention, May 23, 1924.

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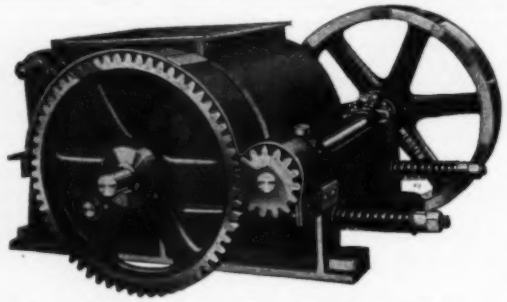

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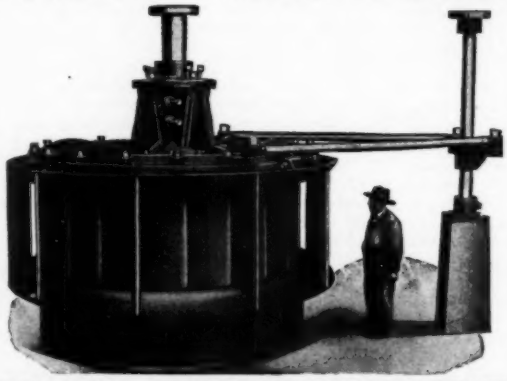

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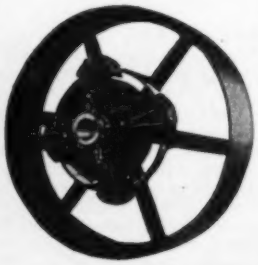

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all of the rolls and parts which are inside the wire during operation. The new wire is then put onto the bottom couch and strung into position. Three inch aluminum pipes are put through the wire loop and held at the breast roll end to keep the loop open and two such pipes are put through the loop to hold the top side of the wire up and other pipes are put through to hold the bottom side of the wire down. Thus the loop is held open while the motor operates to bring the Fourdrinier table back to its normal position inside the wire. The aluminum pipes are removed and the wire stretch roll, which is normally mounted on a vertical screw, is hinged and when the Fourdrinier runs out is in a horizontal position, but when the Fourdrinier is back in place and when the aluminum pipes are removed, the wire stretch roll stand is lowered to a vertical position, thus taking up the slack in the wire. The first one we built had a plain couch roll and the slack in the wire was obtained by lifting the bottom couch roll in a crane after the wire had been put on and holding it in a position approximately above the guide roll, thus to give the desired slack and after the aluminum pipes were removed, the couch roll was put back into its bearings, but in our later machines where suction couch rolls have been employed, we found it desirable to get the slack in a different manner and we did this by telescoping the breast roll end of the side rails and operating through a rack and pinion, telescope the frame so that the breast roll would travel about 24 inches toward the couch, thus accomplishing a shortening of the side rails and this permitting the bottom couch to be left in its own bearings without being lifted by the crane and greatly simplifying the operation.

With this Removable Fourdrinier it is also possible to cut down the time required to change a wire to less than an hour, whereas several hours were previously required on a wide machine with all the rolls and suction boxes being of very heavy construction. Also this method eliminates practically all of the manual labor as the new wire could be put on with the regular operating crew not requiring additional help. The workmen like it as it saves them a lot of heavy lifting and straining. It also eliminates the possibility of any damage to the wire. It avoids the possibility of any damage to the table rolls or bearings. None of these parts are disturbed, they are left in the same perfect alignment after the wire is put on as before. In other words, the alignment and adjustment of all the running parts has not been disturbed. This is a great improvement over the old way where every roll put in is a risk of damage. Also when the rolls are piled up on the floor they are subject to injury and strain; are liable to be sprung or bent or damaged in various ways. This is all eliminated.

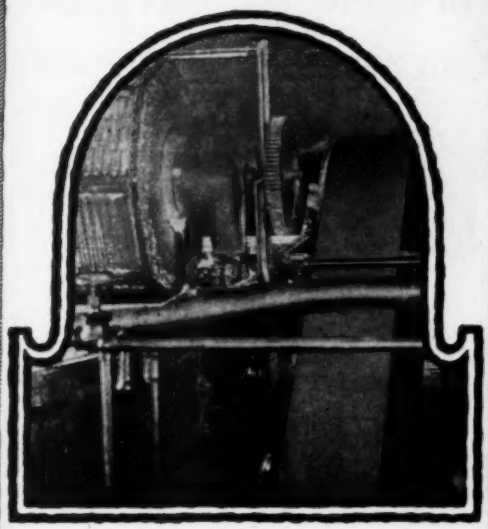
The production of paper is increased and the profits are also increased because the overhead and labor cost in the mill are going on just the same when the machine is down for changing a wire as when it is running and under the old conditions additional labor is employed especially for this operation.

The wires last longer; the table rolls and bearings last longer and keep in better condition. The back-breaking, lifting and labor is practically cut out; the production increased.

This Removable Fourdrinier has been worked out so that it is rapidly becoming a standard and the paper mills are rapidly demanding it and we believe it is only a question of time when all new machines will be equipped with it.

We wish to distinguish between the Beloit Removable Fourdrinier and other so called removable Fourdriniers. We have been trying to think of a name which would fully express the difference between ours and the other near Removable Fourdriniers which are being offered to the trade. We have not settled upon what this name should be but for the purpose of this paper, we will call it the Beloit Unit Removable Fourdrinier and this means that the breast roll, table rolls, all the suction boxes and all parts which are inside the wire when running, roll out as a unit.

You may be interested to know that on the Consolidated machine which was the first Removable Fourdrinier we had built, having 100 foot wire, 160 inches wide, last week they began at seven o'clock in the morning and put on a new wire and washed two felts and had paper on the reel at 8:35 without making any special effort to make a record of time and all this was accomplished by the regular operating crew; namely, one set of men, no extra help being called in. There was no heavy lifting; there was no damage to the men or to the machinery. Without this Unit Removable Fourdrinier it would have required two or three times as many men; it would have taken at least twice as long, possibly three times as long and when you reduce this saving of time and consider the increased production and the saving of extra labor and multiply this by the number of new wires put on a high speed machine in a twelve months period, you can readily see that



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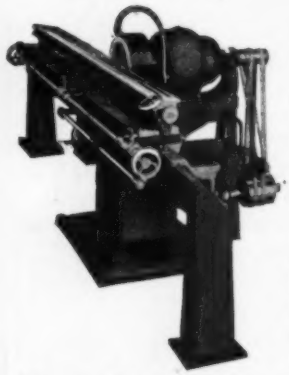

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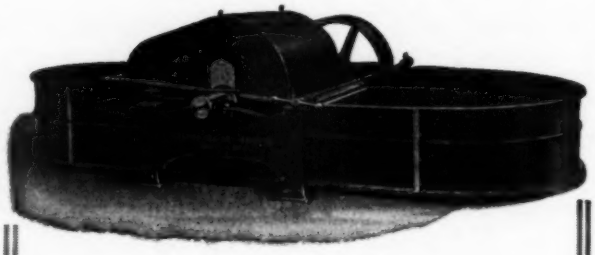

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We have realized that we cannot build all of the new machines that are purchased and for that reason have adopted a liberal policy of authorizing our competitors to make this Removable Fourdrinier when their customers desire it, upon the payment of suitable royalty. We have followed this practice in other patented and valuable features, such as the four deck dryers for board machines, the oscillating device for suction boxes, et cetera. We have done this because we look upon our responsibility to the paper industry as a whole, as one of service and we want to assist the mills to secure these improvements as far as possible, even though they may prefer to have their machines built elsewhere.

Question of the Shake

There is a very grave question before the industry as a whole at this time; namely, whether a machine should have a shake or not. We still cling to the belief that a shake is an advantage and we have worked out some very ingenious applications of a shake for a wide and high speed machine. Our new shake is so designed that the whole Fourdrinier does not shake as in the past, but only the table rolls and the table bars which support the rolls. This is done to cut down to a minimum the weight of the parts which shake which enabled us to get a more snappy, effective shake.

The shake as we have looked upon it in the past, came into disrepute as machines grew wider and faster because all of the parts such as table rolls and side rails, et cetera, were built heavier and the shaking parts were becoming so heavy that it was impossible to get anything but a very sluggish shake. By this new shake of ours we can apply an effective shake to a wide, fast machine equivalent in effect to the shake formerly obtained on the narrower slow speed machines. This new shake is driven by a variable speed motor which can be speeded up or slowed down while the machine is running. It is also built so that the length of the stroke can be increased or decreased while the machine is running. It can be adjusted while the machine is running from one hundred and seventy-five shakes per minute to four hundred and fifty shakes per minute and from ⅛ inch throw to ½ inch throw. Let us assume that one hundred and seventy five shakes per minute is correct for six hundred feet; then in order to give the stock the same number of shakes at twelve hundred feet it is necessary to run the shake three hundred and fifty shakes per minute. In other words, you vary the shake according to how you vary the speed of the machine. You adjust the length of stroke according to the character of the stock and the formation desired. By having all the parts light you can get the same result, we believe, on a wide machine and on a fast machine as you previously got on a slow narrow machine.

Another feature of the shake is it is so built that there are actually from two to five shakes on the same wire and thus instead of getting the full length of stroke at the breast roll as in the old way and tapering down to the suction boxes, with our new shake you can get the full length of stroke down to within 4 feet of the suction boxes. You may say that the formation has already been accomplished within the first 6 feet after leaving the breast roll. If that is so, it is very simple to so shake the wire as to conform with each individual's own ideas of where the formation takes place. Some say it takes place near the breast roll, others, farther down. We will not attempt to decide the question but we have built the shake so as to meet the condition whatever it may be.

Raising and Lowering Mechanism

Our latest machine is also built with a raising and lowering mechanism which raises and lowers the head box and the breast roll end simultaneously and this can be raised or lowered while the machine is running. This combination of Removable Fourdrinier, variable shake and raising and lowering mechanism and also with a high slice, gives the paper mill the much needed opportunity to experiment until the proper shake, proper elevation of breast roll, proper head of stock behind the slice, et cetera, can be determined to suit the conditions in each particular mill and we must all admit that these conditions do vary with the stock and mill conditions and the combination of head of stock, shake, et cetera, will be different at Escanaba from the Soo or from Brainerd or from International Falls, but these varying conditions can be successfully and effectively met by this new Fourdrinier.

This paper is getting rather long and I fear it may become tiresome so will mention a few other points very briefly; namely, we have in the last year or two designed our press roll bearings, dryer bearings, calender bearings and all the felt roll bearings in such a way as to insure positive and copious lubrication without the use of water-cooling, either

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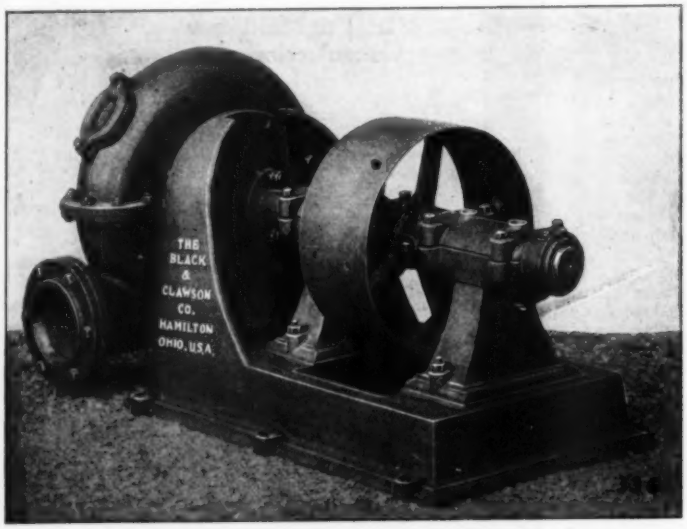
Leading Builders of Paper and Pulp Mill Machinery

Hamilton, Ohio, U. S. A.



Fan Pumps of Iron or Bronze in Sizes from 2″ to 12″.

ESTABLISHED 1873, and since we have steadily grown and stood forth as leaders in the manufacture of paper making machines and other equipment for every requirement in Board, Pulp and Paper Mills.

Our large plant and special equipment with skilled and trained help enable us to render efficient and prompt service and satisfaction to a customer.

The best is none too good. Let us serve you.

Where "Tyler" Wires are Made!

More than half a century of wire weaving has built up the plant pictured above.

Practically all of the wire weavers in the Tyler Plant have made this their life work—year after year they have built up their skill in the art of weaving—they have constantly striven toward the ideal of making Tyler Wires the best to be had in the world.

The looms on which Tyler Fourdrinier Wires and Cylinders are woven were designed by the Company's engineers and were built in the Company's machine shops.

The Company also operates its own wire-drawing department, where rods of a special formula are drawn to assure long life and accurately woven wires.

Men interested in the manufacture of paper, when in Cleveland or vicinity, are invited to visit our plant.

THE W. S. TYLER COMPANY, *Cleveland, Ohio*

TYLER FOURDRINIER WIRES

CYLINDER WIRES BACKING WIRES WASHER WIRES CORDUROY WIRE CLOTH HUM-MER ELECTRIC SCREEN

on the presses or on the calenders. We believe we have taken a real step ahead in this respect. Our bearings are all built so that they are self-aligning, waterproof, water tight and dust proof and the question of oiling is very much simplified. It is only necessary to replenish the oil once a week and if these bearings are handled as directed, there should be no oil running on to the machine or on the floor and thousands of dollars per year saved in lubrication cost alone, also thousands of dollars in the cost of power. For example, our latest high speed machine was taking only 275 H.P. at about nine hundred feet per minute on the variable speed section.

A New Rope Drive

We must also mention another important feature; namely, our new rope drive which eliminates all gears and all clutches. It is absolutely noiseless and nothing to wear about it. It gets rid of all of the disadvantages of the old Marshall drive and it is very simple and all in plain sight with nothing mysterious about it. It is connected to a variable speed steam engine or a variable speed motor or a variable speed turbine, either direct or belted. We have been sympathetic in watching in assisting in the development of the electric drive and it has given a considerable amount of satisfaction in some places, but we are not ready to admit that it is in any way better, in fact in our judgment, not as practical as our rope drive except in cases where there is no basement and it would be impractical to have a basement. Our rope drive requires a basement and wherever it can be installed we do not hesitate to recommend it. Will be glad to give you more details on this if you so desire. Each unit, such as the different presses, the couch, the different sections of dryers and the calenders, are stopped and started independently by means of an electric push button mounted on the front of the machine, thus giving a very excellent and very handy control.

There are, of course, a great many things that could be said that might interest you on the subject of steam joints and the removal of water from the dryers and keeping them free of air and this has been a very important problem to solve. We believe we have solved it but as the speed of paper machines increases, this problem will continue to be present and it is one that we are giving the utmost study and attention to.

In closing let me say that it is our judgment that the so called wide or three roll machines for news print are just as practical as the two roll machines and can be made to operate with equal satisfaction and results at high speed as the narrower machines and we believe that the time is coming when news machines, in fact, all paper machines will be built wider and faster. There are no mechanical obstacles in the way of building the wide machines to run just as fast as the narrower machines. We believe that our new Fourdrinier will meet the most serious obstacles. The Removable feature will overcome the handling of the heavy parts by hand. The new shake will offset the increased weight of the shaking section; the high slice and raising and lowering device will give that flexibility and opportunity for adjustment to meet local conditions which has not heretofore been possible except by rebuilding the machines for each change desired and this always involves great expense. A few thousand dollars spent wisely and judiciously at the time of purchasing a paper machine should pay handsomely in the future. After all, a paper mill is built around the paper machine. The paper machine is, therefore, the key to the whole production of the mill and on that depends whether the paper company is going to be a failure or moderately successful or highly successful and we do not believe that too much time can be spent in studying this question.

We are always open minded, interested and anxious to learn from the experience of paper mill superintendents, managers and machine-tenders, anything that will assist us to build a better machine or which will enable them to put a new felt on quicker and with less labor or a new wire, or anything that will contribute to the success of the operation.

We have a force of engineers continuously studying all these problems. We are trying to render a service that is in a measure unselfish, but of course, primarily our business is to our own concern to the best advantage but our conception of the best way to do that is to render the best service to our friends and customers.

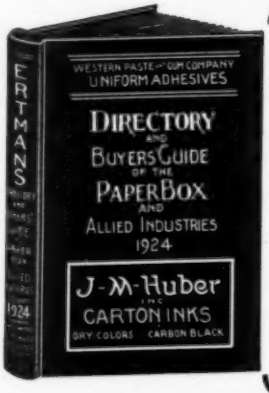
Mr. L. D. Albin, formerly general sales manager of the Ingersoll-Rand Company, 11 Broadway, New York City, has been elected vice-president in charge of European sales of that company. Mr. D. C. Keefe, formerly assistant general sales manager, has been appointed to succeed Mr. Albin as general sales manager.

Its safety stops
DEFEAT CHANCE
Safeguard the lifting and carrying of materials in your plant—use an Everedy Portable Electric Hoist.
Combined with its brute power is intelligence. Limit stops at top and bottom, adjustable to any point, prevents over running of load in either direction. These metal fingers that think, protect load and hoist when workmen forget. With the Everedy the load is at all times plumb with the center of the suspension hook.
Get details—also new, free, illustrated catalogue of our full line—Everedy Portable Electric Hoist—Reading Multiple Gear Chain Hoist and Reading Cranes. READING CHAIN & BLOCK CORP., Reading, Pa.
Everedy
ELECTRIC HOIST »» Multiplies Man Power
Reading Multiple Gear Chain Hoist & Cranes

FAWCUS
Herringbone Gear Reductions

They increase production, save labor and decrease wastage on Calenders. Write for literature. Special Machinery—Couplings—Gears.

FAWCUS MACHINE CO., Pittsburgh, Pa.
2819 Smallman St.



If interested in the
PAPER BOX INDUSTRY

GET THIS BOOK

For Particulars Address
RAVENSWOOD PUB. COMPANY
115 Washington Ave. No., MINNEAPOLIS

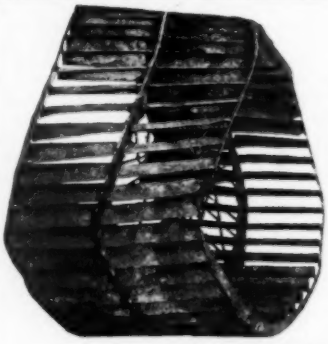
New Sand Filter

A SPECIAL filter for paper mills, producing all the results the paper manufacturer desires. It is a modification of the well known Hungerford filter adapted to paper mill use. It is constructed of concrete, strictly wrought iron pipe, brass strainers and especially prepared silica sand. It is as durable and efficient as can be built at any cost. It can be sold at a very low figure.

This filter gives perfectly clear water, washes thoroughly, does not require renewal of the sand bed, is absolutely reliable in the performance of its duty and requires a minimum amount of attention.

Send for full particulars

Hungerford & Terry, Inc.
CLAYTON, N. J.



This blast wheel is an extraordinary demonstration for the strength of Plexiform construction and bears out the claim of Bayley engineers—proven many times by less severe tests— that Plexiform construction has the maximum of structural strength, though comparatively light in weight.

STRENGTH

This wheel was crushed under tons of debris when a four-story building collapsed upon it.

Not a rivet was broken, not a joint loosened, nor a fracture in any part.

Strength of materials is sometimes proven by unusual tests, by strains out of all proportion to those experienced in actual use.

21

Bayley

Manufacturing Company
734 Greenbush Street
MILWAUKEE

WE-FU-GO AND SCAIFE
WATER
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO., PITTSBURGH, PA.

Michigan News

June 1, 1924.

Kalamazoo Mills Not Affected by New Order

Box board companies located in the Kalamazoo valley are not influenced or affected by the order issued by Secretary John James Davis, secretary of the department of labor, that that industry agrees to institute the eight hour day, eliminating Sunday work in the future.

According to a dispatch from Washington, members of the box board industry were in conference with Secretary Davis and at his suggestion adopting a resolution to that effect. Secretary Davis told the conference that unless the 12 hour day is eliminated from all industry, legislation to force such elimination probably would be enacted. He cited the child labor law as an example of what occurs when industry refuses to correct ills of labor conditions. President Coolidge is also in favor of the eight hour day.

"Kalamazoo's board mills have long been on the eight hour day schedule," said L. W. Sutherland, "the same conditions applying that exist in the book and writing mills. There has never been any desire expressed to return to the old two tour system with its corresponding long hours." Mr. Sutherland is president and general manager of the Sutherland Paper Co.

While none of the board executives in the valley consented to be quoted they declared that if one would but read carefully between the lines of the Washington dispatch, they would notice that the elimination of all Sunday work really means a five day week in the future, as it will be necessary to do all clean up and repair work after the Saturday morning shutdown. The effects will be seen in cutting down the production of board, stabilizing prices and spreading available business over a wider field, enabling many board mills now closed for lack of business to reopen. In like manner it will result in a reduction of wages, cutting the working time from six to five days for at least two shifts of men in each mill.

American Boxboard Company Approves 8-Hour Day

The American Boxboard Company, of Grand Rapids, Mich., strongly supports the action taken by boxboard manufacturers all over the country, at their meeting in Washington, May 2, when they went on record as favoring an eight-hour production day per individual workman, with elimination of Sunday operations.

In this connection, Frederick H. Bither, an official of the American Boxboard Company, expressed himself, in substance, as follows:

"We've been operating on that basis for years and thoroughly believe in its merits. We believe workmen do more work, and do it more efficiently, in an eight-hour day than in a day of more hours. The principal of the eight-hour production unit has proven its value in a great many industries, and applies just as specifically in the paper industry as any other. It is not only the most logical, but also the most practical and economical plan.

"For the past ten years we've been operating in three eight-hour shifts, and find by actual experience that the plan is more economical to the company, and more agreeable among our workmen than units of longer hours. Men working eight-hour shifts enter their duties with pep and enthusiasm; they are cheerful and more efficient because adequate rest and recreation make them physically and mentally fit. It's simple to grasp. The eight-hour unit's good points are too obvious to argue to the contrary.

"The American Boxboard Company gave President Harding its whole-hearted support in helping him dig up data on working conditions in the industry when agitation was started on this subject. Our company is one of the pioneers in the movement, and, of course, it has our unqualified approval."

Two Kalamazoo Mills Take Out Bond Issues

Two Kalamazoo Valley paper industries, the Hawthorne Paper Company and the Wolverine Paper Company, Otsego, are engaged in the sale of authorized bond issues, the funds so derived to pay for recent betterments, also to provide additional working capital.

The aggregate value of the two issues is $217,000 and constitutes unsold portions of issues originally authorized several years ago. Olmstead and Mulhall are acting as fiscal agents in both sales campaigns.

In the case of the Hawthorne Paper Company, on June 6, 1917, an issue of bonds for $500,000 was authorized, $300,000 being sold at the time. Of the remaining $200,000 a portion

Gurney Maximum Service—

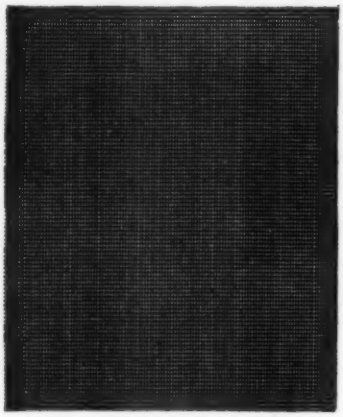
Maximum Capacity Ball Bearings solve bearing problems

18235

GURNEY
BALL BEARINGS

MARLIN-ROCKWELL CORP.
JAMESTOWN, N. Y.

For Paper and Pulp Mills



Mill owners or superintendents have found that **Cabble Superior Fourdrinier Wire** gives unequalled service on their paper machines. Smooth wire of an even mesh, **Cabble Superior Fourdrinier Wire** does not groove the suction boxes and hence is suitable for high or low speed and long runs. No trouble with the seams. We make them to suit your requirements.

Give **Cabble Superior Fourdrinier Wire** a trial when next you need replacement, and know what it is to sit back and feel "pretty" confident of no shutdowns and increased production.

Cabble Superior Fourdrinier Wire is made in brass or phosphor bronze. All lengths, all widths, all meshes.

We also make wire cloth of standard mesh in brass or phosphor bronze of the highest quality.

The WM. CABBLE
EXCELSIOR WIRE MFG. CO.

80-88 Ainslie Street Brooklyn

The Sandy Hill Iron & Brass Works

Hudson Falls
New York

Manufacturers of **Paper and Pulp Mill Machinery**

amounting to $150,000 is now being offered at $96.50 and interest to yield about 6.40 per cent as the bond rate 6 per cent at par. They are due January 1, 1937.

The Hawthorne mills is in fine condition, many improvements having been made recently, which have resulted in increasing production 25 percent with virtually no increase in cost of labor or general overhead.

March 1, 1918, the Wolverine Paper Company authorized an issue of $200,000 first mortgage 6 percent bonds, disposing of $133,000 at that time. The balance of this issue, due March 1, 1938, is now being sold at $96.50.

Paper Mills Seek Wood Conservation

A state-wide movement for forest conservation was started May 14, at Kalamazoo, Mich., by the Rotary Club at a banquet, and resolutions were adopted favoring the McNary-Clarke bill now before congress which seeks adequate forestry policy for the United States. This action was taken because the paper industry of the Kalamazoo Valley is almost wholly dependent on the forests for raw materials, and wood waste seriously affects the industry.

President Fred C. Bond, of the Rotarians, named the following as an organization committee: John Wood Blodgett of Grand Rapids, past president of the National Lumber Manufacturers' Association; Felix Pagenstecher, president of the Bryant Paper Company, Kalamazoo; Harry E. Fletcher, president of the Fletcher Paper Company, Alpena; W. L. Saunders, president of the Cadillac-Soo Lumber Company, Cadillac; and Herman Lundeen, president of the Kneeland-Bigelow Lumber Company, Lewiston, Mich.

Among the speakers at the banquet were Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association; Raphael Zon, of St. Paul, Minn.; John W. Blodgett, of Grand Rapids; and William L. Saunders, of Cadillac, Mich.

Coal Rate Hearing Postponed to Later Date

The Interstate Commerce Commission rate-hearing which was scheduled for May 19 at the Federal Building in Grand Rapids, Mich., as the result of a cooperative complaint of the Western Michigan paper manufacturing interests located in Grand Rapids, Kalamazoo, Muskegon, Plainwell, Otsego and other cities, backed up by their local chambers of commerce, against alleged unfair freight rates on coal from West Virginia, has been postponed to a later date.

The reason given for postponement was a full docket, it is said, which would not have given much time to the paper complaint, as it was among the latest to be filed for that court session. Rather than have the matter treated in slip-shod, hurry-up manner, the paper manufacturers' general consensus of opinion seemed to be: "We prefer to have our hearing postponed to a later date when our complaint can be given a thorough investigation, than to allow it to be shoved through court hurriedly, as we want to get to the bottom of this thing."

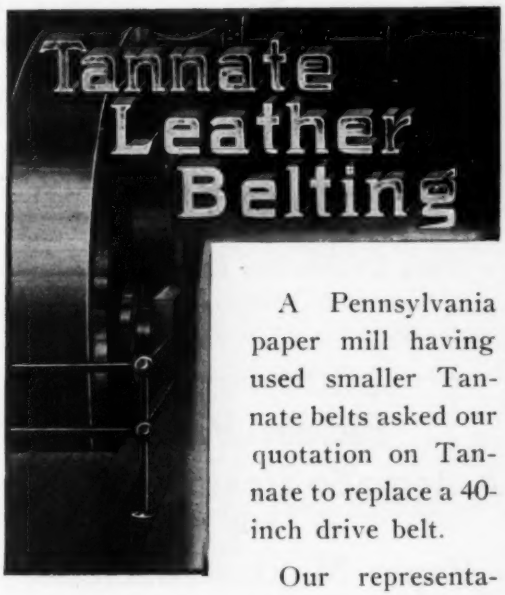
It is thought the hearing will be granted at a not far distant date this summer.

May Appeal I. C. C. Decision on Freight Complaint

The American Boxboard Company, of Grand Rapids, Mich., manufacturers of paper boxes and box materials, has been unsuccessful in its effort to prove to the Interstate Commerce Commission that freight rates it has been paying on straw in carlots from Yorktown, Ind., to Grand Rapids, were unreasonable. Its complaint was dismissed by the commission at Washington, according to a dispatch, May 18. Officials of the paper company maintain that the dispatch is rather misleading in that the case was to recover overcharges claimed some time ago, according to R. L. Tuttle, traffic manager.

"This case was the outcome of a petition for reparations on twenty-five cars of straw moved during federal control of the railroads, and the amount involved was less than $500," said Mr. Tuttle. "The decision of the Interstate Commerce Commission is in direct denial of the basis on which it had previously contended as 'just and reasonable.' Apparently the commission is balled up a bit. It is highly probable that an appeal will be taken from the decision," concluded Mr. Tuttle.

The Kalamazoo Valley division of the Cost Association of the Paper Industry held an election of officers in the Park-American Hotel, Kalamazoo, on May 5th. The officers elected for the following year were: President, Glen Ingling, Kala-



A Pennsylvania paper mill having used smaller Tannate belts asked our quotation on Tannate to replace a 40-inch drive belt.

Our representative told them it would cost about an even thousand dollars; considerably more than rubber or oak belting. The prompt reply was, "Well, send us that; if the plant is stopped for two or three hours it will cost us $1,000; and disorganize the whole place."

And they need not have pinned their faith on Tannate strength alone. For its unusual tractive grip saves slip, transmits more power, increases output.

This is true not only of the regular Tannate on "dry" drives, but equally true of Watershed Tannate on all wet drives. Watershed is a real waterproof belt, guaranteed to stand up in all degrees of wetness. And it has as strong grip wet as dry.

J. E. Rhoads & Sons

PHILADELPHIA: 47 N. Sixth St.
NEW YORK: 114 Beekman St.
CHICAGO: 334 W. Randolph St.
ATLANTA: 80 S. Forsyth St.

Factory and Tannery: WILMINGTON, DEL.

Morey Paper Mill Supply Co.

99 Chauncy Street BOSTON, MASS.

WALTER G. MOREY, Manager

Canadian Office: 19 Alexander St., Three Rivers, P. Q. P. O. Box 183; CLEMENT KING, Mgr.

Vulcan TRADE MARK

Canvas Dryer Felts—3-Ply Triune—3-Ply Tri-Umph—Twin Warp Multiple—Hard-wove Brandon Single-warp—4-Ply and 6-Ply English Baker Weave.

Fourdrinier and Cylinder Wires—Cylinder Deckle Webbing—Machine Tape and Cutter Web—Stork Double-face Enamelled Apron-cloth (Unbreakable)—Bemis Rubber Splicing Tissue. Canadian Agents, Monarch Pulp Stones.

Pickles' Patent Automatic Steam Regulator

FOR

Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

LOCKPORT Felts

EXCLUSIVE MAKERS OF

Paper Makers' Felts

Have You Run Them?
If Not, Why Not?

Are You Interested in Accurate Running Felts?

Give Us a Trial
Get Authentic Information
Ask the Men Who Run Them

Yours for service

LOCKPORT FELT CO., Newfane, N. Y.

Fitchburg Duck Mills

ESTABLISHED 1844

FITCHBURG, MASS.

MANUFACTURERS OF

STANDARD AND MULTIPLE PLY

DRYER FELTS

English Weave in Two, Three, Four, Five and Six Ply—60 Inches to 176 Inches in Width

Fine Faced Felts for Fine Papers. Absolutely no felt marks in paper. TRIUNE Three Ply Felts for Coarse Papers.

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

mazoo Paper Co.; vice-president, Frank Brown, Michigan Paper Co., and Harry Bradford of the Rex Paper Co. was re-elected secretary-treasurer. The subjects discussed at this meeting were tying cost, general book inventory and conversion of paper stock costs. The next meeting will be held May 26th, at which meeting general costs will be discussed.

Retired Paper Executive Taken by Death

George J. Heinzelman, long prominent in the Michigan paper manufacturing industry, died at his home in Grand Rapids, May 8, following a brief illness. Mr. Heinzelman was a retired president of the Grand Rapids Paper Company.

Mr. Heinzelman was identified with many manufacturing enterprises, having been president of the Grand Rapids Bookcase & Chair Company at Hastings, Mich.; an official of Rindge, Kalmbach & Logie, shoe manufacturers at Grand Rapids; a director of the Home State Savings Bank, and was on the directors' roll of several other of Grand Rapids' leading furniture factories.

Mr. Heinzelman was a life-long resident of Grand Rapids, having been born there, March 24, 1863. He was 61 years of age.

Paper Company Fetes Customers to Banquet

The Quimby-Kain Paper Company of Grand Rapids, entertained more than 150 printers to a banquet in their warehouse dining rooms, May 15. Following the banquet, addresses were made by T. P. Kain, president of the company, and I. E. Quimby, secretary. They voiced their appreciation for their customers' patronage.

A motion picture, showing the manufacture of paper from the cutting of the wood until the finished paper comes from the mills, was screened. The purpose of the picture is education of the paper consumer, and its showing is made possible through co-operation of a number of big mills throughout the country.

Clarence Pasch, of the power department of the Bryant Paper Co. has accepted a position with the Republic Flow Meter Co., of Detroit. He will leave for his new duties the first of June, making his headquarters at Grand Rapids. He will be in charge of sales and service in Western Michigan.

The new addition at the Southerland Paper Co. is being rushed to completion. The ground is already broken, and the foundation laid. It will be only the course of a few months when this will be occupied, unless something unforeseen turns up.

Ohio News

June 1, 1924.

Middletown Industry Helps Build City

Between Middletown and Longview, Washington, is a distance of thousands of miles but the needs of the two brought them together in the consummation of a business deal involving the purchase of equipment of a complete paper mill.

The Shartle Brothers Machine Company, well known in the country had as its competitors for this business the best machine builders in the United States, yet the representatives of the Pacific Straw Paper and Board Company awarded the contract for the paper mill machinery to them.

Longview, fifty miles north of Portland, one hundred and thirty-three miles south of Seattle and fifty miles inland from the Pacific on the Columbia river, is a city that has been conscientiously planned and carefully built since January, 1922, when the site was first chosen by the Longbell Lumber Company for a new location for their industry.

The inception of a straw paper mill was brought about by the logical necessity of an enterprise of this kind and the fitness of the location for it. Along the Willamette and the Columbia rivers is one of the most fertile and extensive wheat growing districts in the United States. The straw is now a waste product and then too the market is already there. Now strawboard must be shipped across the continent at an enormous expense to manufacturers.

Thus Middletown has been able to come into contact with Longview, Washington.

Convention Delegates in City

Practically all members from Middletown of the Pulp and Paper Mill Superintendent's Association were present at the annual convention in Dayton, May 23-25, and Benj. Bishop,

DUXBAK BELTING
TRADE MARK
for
wet places,
dry places,
hard drives
—an ideal belting for paper mill drives
Send for Catalogue
DUXBAK BELTING TRADE MARK
Chas. A. Schieren Company
Tanners
Leather Belt Mfrs.
Main Office and Factory
73 Ferry Street, NEW YORK
Branches and Distributors in All Leading Cities

SIMONDS
Barker and Chipper
Knives
The best knives for Pulp Mills. Made of the finest edge-holding steel, skillfully made and tempered right to withstand wear.
Write for Catalog and Prices
Simonds Saw & Steel Co.
Fitchburg, Mass. Chicago, Ill.

Safe and Efficient

Patented Feb. 8, 1916

Essmueller
Peerless
Friction Clutch
With the Peerless Positive "V" Stop

A clutch designed for use on Globe or Cylinder Rotaries, furnishes positive power for starting the equipment; and absolute stopping for loading or unloading.

All parts are made of high-grade material, accurately machined and fitted.

This clutch is made in a number of sizes. Write for further information, or send us complete specifications and clutch will be shipped at once.

ESSMUELLER MILL FURNISHING CO.
1216-24 South Eighth St. SAINT LOUIS

IF YOU USE CHAINS USE UNION CHAINS

"The Chain of Double Life"

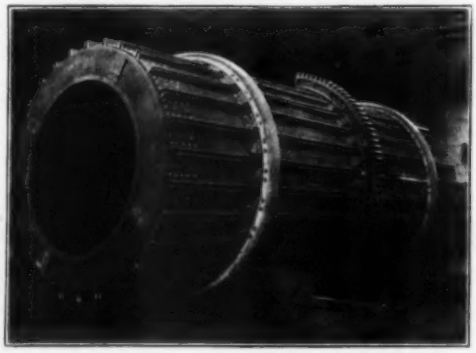
THEY GIVE LONGER SERVICE PER UNIT OF COST

The bridged steel link insures strength and permanency. The large case-hardened pins and bushings, both reversible and renewable, insure durability and economy.

We can fill any of your requirements for elevators and conveyors, roller chains, bushing chains, attachment links, cast, cut, and renewable tooth sprockets.

Let Us Have Your Inquiries

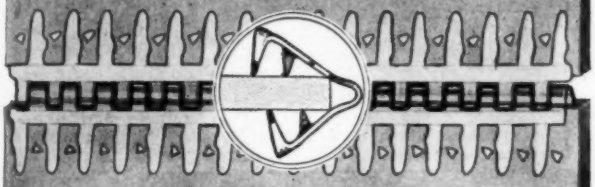
THE UNION CHAIN & MFG. CO.
SANDUSKY, OHIO



Notice the heavy ship channels, pressed steel tire and gear saddles securely riveted to the channel sections and the substantial construction of the tires and gears in this Paulson Barking Drum. Is it any wonder that they stand the test? If interested in barking drums now, write us. You'll be satisfied with a Paulson drum.

MANITOWOC ENGINEERING WORKS
"Digester Makers Since "91"
Manitowoc, Wisconsin

ALLIGATOR
TRADE MARK REG. U. S. PAT. OFFICE
STEEL BELT LACING

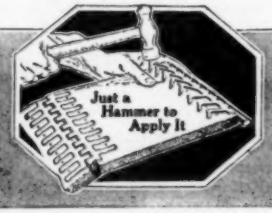


Uninterrupted Belt Service

When you lace a belt with Alligator Steel Belt Lacing, you probably will never have to touch the lacing again as long as the belt runs unless you want to shorten or lengthen the belt—and if you do, the joint is already half made. A separate hinge lacing, smooth and flexible. "Just a Hammer To Apply It."

FLEXIBLE STEEL LACING COMPANY
4675 Lexington Street, Chicago, Ill.
In England at 135 Finsbury Pavement, London, E. C. 2

"Every Tooth A Vise"



For Every Size and Kind of Belt

of this city was active in arranging for the visit of the delegates to local paper mills.

Friday was designated as Middletown day and the delegates were first entertained at one o'clock luncheon at the Hotel Manchester, at which 350 paper mill men were assembled. At 2:30, the luncheon, sponsored by the Rice Coal Company, of Dayton, closed and the divisional meetings were opened. The Newsprint division met at the Hotel Manchester; the Board division at the Gardner-Harvey paper company; the Coarse Paper division at the Hotel Manchester; Book and Fine Writing Paper division at the Sorg Paper Company; and the Chemical Pulp division at the Hotel Manchester. Among the more prominent men in the assemblage were Sherman Rogers, industrial editor of The Outlook; Thurman Miller, of the Wilmington, Ohio, News Journal; E. T. A. Coughlan, first vice-president of the association, Coated Paper Company; and H. W. Server, fifth vice-president, of the Miami Paper Company, West Carrollton.

Northern New York News

June 1, 1924.

Rumford Pulp Co. in Bankruptcy

The Rumford Pulp Reduction Company, Inc., of Watertown, with a plant at Rumford, Me., has filed a petition in bankruptcy in U. S. district court with liabilities of $108,477, mostly unsecured, and assets of $97,402, including stock of pulp, $13,500; machinery, $47,669; buildings on leased land, $31,831, and patents $4,200. Paul B. Hudson and Dr. C. M. Rexford of Watertown are the principal owners.

Attorney William H. Gilman has been appointed receiver with bond of $15,000. The court appointed Fred G. Latham, Peter W. McDonald and R. W. Goodwin appraisers.

According to P. B. Hudson, president, foreign competition in the pulp industry and lack of proper tariff protection were the causes for the company's failure. There has been little market for the company's product since the latter part of 1922. The company was organized in 1921 to take over and develop the business of the Cornell Pulp Reduction Company of Black River.

To Sell Carthage Sulphite

After numerous delays, during which the owners and creditors of the Carthage Sulphite Pulp and Paper Company have been given opportunity to provide working capital for the resumption of operations, Federal Judge Frank Cooper has finally ordered sale of the property under mortgage foreclosure action. The purpose of the proceedings is to see if the company can realize $650,000 due the creditors.

The owners of the mill have been unable to raise the working capital necessary to resume operations. It is understood that after the sale of the property under foreclosure, a proposition will be made for reorganization of the company to put it on a firm footing.

Let Development Contract

The Northern New York Utilities, Inc., of this city, owned by a syndicate of paper mills headed by the St. Regis company, has let the contract for the development of the Soft Maple dam on the Beaver river to the U. G. I. Contracting Company of Philadelphia. The development will be capable of developing 20,000 horsepower, with a possibility that an extra unit may be installed which will increase the capacity to 30,000 horsepower. The cost will be about $2,000,000.

One of the dams which must be built will probably be the largest dam in New York state, it is claimed. Five hundred acres of land will be flooded.

St. Regis Halts Canadian Plans

The St. Regis Paper Company of this city, which was planning to erect a 200 ton newsprint mill at Cape Rouge, Quebec, this year, as the first unit in a great newsprint manufacturing plant, has postponed the project indefinitely. The postponement is made so that a surplus in newsprint production in Canada will not be created.

The St. Regis company is now importing Canadian sulphite pulp for its St. Lawrence county mills. The sulphite plant at Norfolk has been closed down. The Deferiet sulphite plant will continue in operation, however.

Celestin C. Burns, former general manager of the St. Regis Paper Company, left an estate of about $700,000, it became known when the will was filed for probate in Jefferson county surrogate's court. Bequests were made to several charitable

Ganschow Gears

Reorder Them by Number

Have you ever ordered a gear—one that was needed to repair a serious breakdown—only to find when it was received, that there was an error in some specification, pitch, bore, number of teeth, or some other detail? Have you?

How much is it worth to you to know that any Ganschow gear that you order for replacement or duplication will be identical with the old one?

Realizing that assurance of correct specifications means a great deal to the operator, that certainty means satisfaction to everyone, the William Ganschow Company is giving insurance against errors with every gear.

Every Ganschow Gear is stamped with the Ganschow trademark, but it *also* bears a record of the production number and date of manufacture.

This simple numerical marking assures absolute conformity to original specifications in manufacture of all gears for replacement or duplication and effectively guards against errors which are so easily made.

The Ganschow Type "B" Speed Transformer is applicable to drives where conditions of space or machine construction demands an angle drive. It is built in a wide range of ratios.

Ganschow Speed Tranformers are also made for Direct Drive and Vertical Drive.

"There's a Type for Every Service"

William Ganschow Company

1011 Washington Boulevard
Chicago, Illinois

MEMBER A.G.M.A.

Manufacturers of
Cut Gears and
Speed Transformers

Ganschow
Cut Gears and Speed Transformers

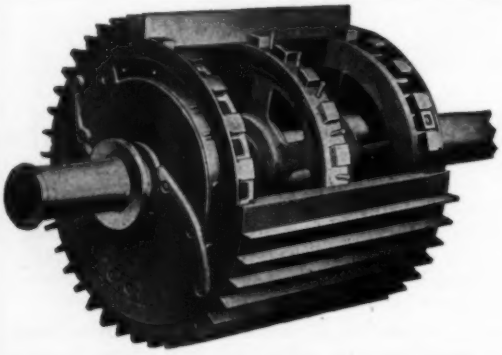
RESILIENT RUBBER ROLLS

THAT ARE SNAPPY BUT NOT SOFT
ARE THE KIND TO USE FOR PAPER MACHINES

MADE BY

STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASS.



Dayton Globe Iron Works

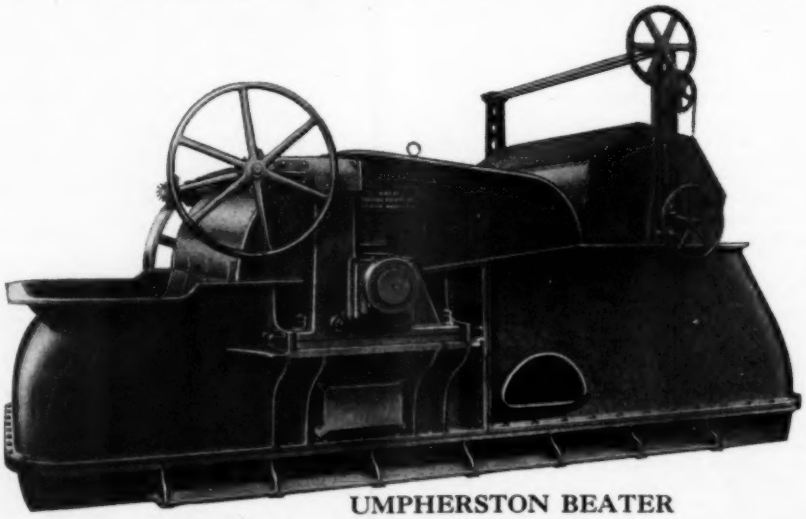
DAYTON, O.

We manufacture Beating and Washing Engines, Head Gates, Hoists and Gears.

Our Wedge Type Bandless Roll made of semi-steel with special alloy bars is practically indestructible.

Holyoke Machine Co., Holyoke, Mass.

Makers of Improved Machinery for Wood Pulp and Paper Mills



UMPHERSTON BEATER

Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors, Super-Calenders, Platers, Cotton and Paper Rolls.

institutions, but the bulk of the estate was left unconditionally to the widow, Mrs. Elizabeth J. Burns, of Watertown. The property consisted largely of securities of the St. Regis Paper Company and the Northern New York Utilities, Inc., in which the St. Regis is a controlling factor.

Taggart Bros. Employes Insured

Additional group life insurance protection is provided for the 119 employes of Taggart Bros. Company, manufacturers of cement bags and wrapping paper, through a policy just placed with the Metropolitan Life Insurance Company.

The new arrangement provides that the employers and employes share in the payment of the premiums on protection of $1,000 for each of the men and $500 for each woman. A policy already in force, on which the company pays the premiums, provides for a similar amount of insurance without cost to the workers.

For the week ending at 7 a. m., May 11, the mill of the De Grasse Paper Company at Pyrites broke its record of production, making 1,103.05 tons of newsprint paper. This mill has four machines, one 130 inch Rice, Barton & Fales, one 120 inch Black & Clawson, and two 160 inch Bagley & Sewall machines. The highest daily production was 186.28 tons of high grade newsprint. All of this paper is used by the New York World.

J. C. McCormick, assistant treasurer of Knowlton Bros. Company, R. T. Boutillier, accountant for the same firm, and Howard F. Farrington, Watertown, certified public accountant, attended the eleventh semi-annual convention of the Cost Association of the Paper Industry at Erie, Pa., last month. Mr. Farrington delivered an address at the conference on "Purchase Discounts."

Negotiations have been completed between the Hanna Paper Corporation and Longshoreman's Union No. 217 of Ogdensburg whereby the union will handle the pulp at the Waddington terminal this year. The men will receive 45 cents a cord for handling the wood. The Waddington terminal will handle 60,000 cords of wood this year, the wood being shipped to the mills at Norwood, Norfolk and Raymondville.

Louis Martin has been appointed superintendent of the Deferiet mill of the St. Regis Paper Company. He succeeds Robert Wark, whose death occurred a few weeks ago. Mr. Martin has 20 years of experience as a papermaker. He served as night foreman at Deferiet during the time that Joseph Krockenburg and William Carls were superintendents. He was assistant to Mr. Wark.

Edward B. Sterling of Watertown was re-elected president of the West End Paper Company of Carthage at the annual meeting. Other officers are: O. A. Miller of Columbus, O., vice-president and S. B. Wardwell of Watertown, secretary-treasurer.

New York City News

New York, June 2, 1924.

Organize Norwegian Paper Mills Agency

The Norwegian Paper Mills Agency, Inc., has just been organized and was incorporated under New York State laws on May 12 with a capital stock of $20,000, by J. Andersen, president; J. A. Brady, vice president; M. J. Gintzler, secretary, and J. H. Kamma, treasurer.

The company will import newsprint, in rolls and sheets, and will act as sole agent in the United States for the following foreign mills: Ankers Traesliperi & Papirfabrik A/S; Bohnsdalen Mills, Ltd.; Aktieselskabet Hofsfos Traesliperi og Papirfabrik; Aktieselskabet Holmen-Hellefos; Hunsfos Fabrikker; Union Paper Company, Ltd., and agent for all of the United States except the Pacific coast for Follum Traesliperi. Offices have been established at 33 West Forty-second street, New York, in charge of G. Hartmann. The sales department is under the direction of Benjamin F. Reist. Officers of the new company are well known in the paper industry, Messrs. Andersen and Gintzler being with J. Andersen & Company and the Pulp and Paper Trading Company.

A. J. Pagel, president of Pagel, Horton & Company, wood pulp importers of 347 Madison avenue, New York, and also president of the Association of American Wood Pulp Importers, was married on May 24 to Miss Aleda C. Chamberlin,

Starch

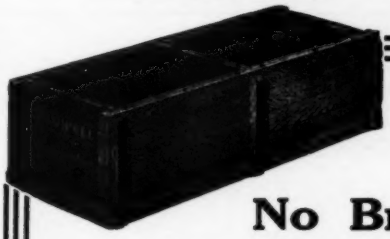
IT TAKES more than a good argument to make a manufacturer change his process. It requires actual proof. Today the leading manufacturers of high-grade paper and board are using starch for sizing where they formerly used an all-glue size, and they are turning out a better and stronger paper at less cost.

FOX HEAD NIAGARA
SPECIAL PAPER

are the recommended brands

Corn Products Refining Company
17 Battery Place New York

Starch



No Breaks
No Leaks

Every Caldwell Tank is machine-planed and jointed—properly. The Caldwell Cypress Tank swells just enough to make it virtually a solid piece of wood, thoroughly leak-proof. True, tight and properly braced—there is no possibility for bulges or breaks.

Caldwell Tanks are built by men who have been making superior tanks for over 30 years.

Send for Catalog

W. E. Caldwell Co.,
Incorporated
2570 Brook St., Louisville, Ky.

Caldwell TANKS AND TOWERS

The Stickle system of removing air and condensation from the dryers, combined with the Stickle automatic control of steam, will produce a more uniform dried sheet with less steam consumed than can be done with any other equipment. We will guarantee this under a competitive test.

Stickle Steam Specialties Co.
Indianapolis, Ind.
New York Office: 46 East 41st Street, New York
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Guaranteed Perfect

Draper Hollow Balanced Brass Balls

FOR STUFF PUMPS

Absolutely balanced; will not pound out of shape

Specify these when ordering new pumps.

Order these to replace worn-out balls.

We make a specialty of repairing stuff pump balls.

We also manufacture—
SOLID BRASS BALLS
IRON AND STEEL BALLS
BALL CHECK VALVES
VALVE FACING TOOLS

The Draper Manufacturing Co.
Port Huron, Mich. **Petrolea, Canada**
Every ball bears our registered trade-mark

THE CHAMPION COATED PAPER CO.
DAILY CAPACITY 250 TONS
HAMILTON, OHIO

March 24, 1924

Trimbey Machine Works,
Glens Falls, N.Y.

Gentlemen:

Enclosed we are pleased to send you our formal order for eight additional Consistency Regulators which we will thank you to ship as soon as possible, same to be installed on the balance of our eight (8) Fourdrinier Paper machines.

The results we are now obtaining on the Regulator which you recently installed on our No. 1 Paper machine are such that we wish to accomplish the installation of these Regulators on the balance of our machines as quickly as possible.

We have been able to effect a very desired improvement in controlling weight, as well as consistency of stock, before it goes on the paper machine.

In your acknowledgement of our order, state definitely when we may expect delivery.

Yours very truly,

EMK

THE CHAMPION COATED PAPER CO.
VICE PRESIDENT

WHAT OHIO THINKS OF THE

Trimbey Automatic Consistency Regulator

Is Shown by Their Orders Since January 1st, 1924

9—Champion Coated Paper Co.
2—W. B. Oglesby Paper Co.
3—Paul A. Sorg Paper Co.
1—Frank A. Smith Paper Co.
1—Hagar Straw Board and Paper Co.
1—Beckett Paper Co.

More than 275 now in use in the United States, Canada, Norway, Sweden, Finland, Holland, Japan, England and Switzerland.

Also "MADE IN CANADA"

TRIMBEY MACHINE WORKS
GLENS FALLS, NEW YORK

daughter of Dr. and Mrs. Edwin Crosby Chamberlin, the ceremony taking place in the home of the bride's parents at 4 West Eighty-fourth street, New York. A large reception followed at the Hotel Plaza. George A. Horton, of Pagel, Horton & Company, was Mr. Pagel's best man. Mr. and Mrs. Pagel have gone to the Pacific coast on a honeymoon trip.

Committee Appointed to Deal with Imports

A group of representative paper manufacturers from many parts of the country held a conference with the new Executive Committee of the American Paper and Pulp Association in New York May 23, at which was discussed the advisability of organizing a committee of prominent men in the industry to deal with the vexatious paper import matter.

As a result of the conference a committee has been appointed, the personnel of which has not yet been made public, it being decided to withhold announcement of the names of the paper manufacturers chosen until each member of the committee has been sounded out on the subject. Each one on the committee will be asked to give assurance that he will devote a good part of his time and energy to the work, and when replies have been received from all and the committee is fully organized the personnel will be announced.

Coated Paper Manufacturers Plan to Organize

The practicability of forming an organization composed exclusively of coated paper manufacturers for the purpose of promoting increased consumption of coated paper was discussed at a recent preliminary meeting in this city of representatives of that branch of the industry.

The following were named members of a committee to consider the proposal: Martin Cantine, of the Martin Cantine Company, chairman; Charles A. Gordon, of the Oxford Paper Company; Grellett Collins, of Dill & Collins; Felix Pagenstecher, of the Bryant Paper Company; Roger Smith, of the S. D. Warren Company; Walter Randell, of the Champion Coated Paper Company, and John R. Miller, of the West Virginia Pulp and Paper Company.

It is reported that preliminary negotiations have been opened to introduce several leading Canadian paper mill stocks on the New York Stock Exchange, among which are said to be the Abitibi Power & Paper Company, Ltd.; Brompton Pulp & Paper Company, Ltd., and the Spanish River Pulp & Paper Mills Company, Ltd. These stocks are traded in actively on the Montreal exchange. The plan is said to be to have a sufficiently large block of shares in each of these companies listed on the New York curb market and then after they have become more widely distributed to have them placed on the New York Stock Exchange. The suggestion, it is said, has met with considerable favor in Canadian financial circles, although details have not been completed.

Philip T. Dodge, president of the International Paper Company, New York, issued an announcement several days ago in which he stated that consumption of newsprint compares very favorably with this time last year. The company is laying aside stocks at present to take advantage of high-water conditions, Mr. Dodge said. Mr. Dodge, who is also president of the Merganthaler Linotype Company, added that the demand for linotype machines was large and that he therefore looked for an increased demand for specialty paper.

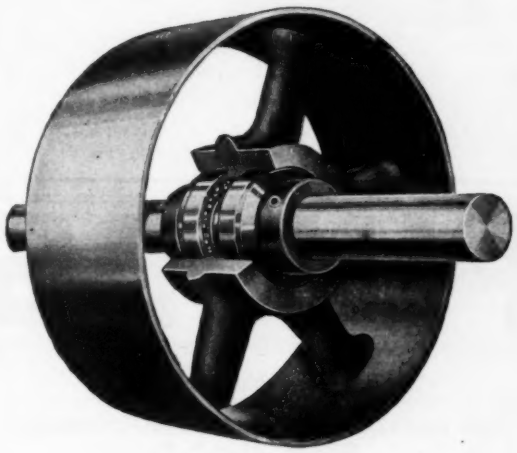
The United Raw Materials Corporation is the name of a new concern organized in New York and incorporated under the laws of this State with a capital of $10,000 to deal in papermakers' supplies. H. Rosenberg, M. Davis and T. F. Garvey were the incorporators, and the concern has opened offices at 38 Park Row, New York. Mr. Rosenberg, president of the corporation, has had 17 years' experience in the paper mill supplies trade.

Robert P. Bagg, youngest son of Edward P. Bagg, head of the Parsons Paper Company in Holyoke, Mass., who has been in the advertising business in New York City for some years as an executive with Barton, Durstine & Osborn, Inc., has taken a position with the Parsons Paper Company and the Millers Falls Paper Company.

The Hudson Trading Company has removed to 270 Madison avenue, New York, where offices considerably larger than the former quarters have been secured on the sixteenth floor.

The Milton Paper Company, jobbers of a general line of paper, is planning to move its offices and warehouse early

Ball Bearing Pulleys



LOOSE Pulleys operating at high speeds or located where it is difficult to lubricate, give satisfactory service if equipped with BALL BEARINGS.

Ball Bearing Loose Pulleys are self-oiling, because lubrication is necessary only two or three times a year.

Ball Bearing Loose Pulleys are also desirable and give excellent service on Mule Pulley Stands, Tighteners, Idlers and Machines, especially where speeds are high.

"Universal Giant" Friction Clutches and Cut-Off Couplings equipped with Ball Bearings are being furnished where service is severe and lubrication a problem. Like Ball Bearing Loose Pulleys, Clutches so equipped need attention only two or three times a year.

T. B. Wood's Sons Co.
Chambersburg, Pa.

Manufacturers of Shafting, Couplings, Set Collars, Hangers, Pillow Blocks, Pulleys, Rope Sheaves, Friction Clutches, Belt Tighteners and Tension Carriages.

TABER PUMPS

Fig. 510 illustrates Taber Double Suction Centrifugal Pump

OVER 40 years of specialized pump building experience stands behind every Taber Pump.

Is our "Silent Sales Engineer" calling on you regularly? If not, write for "him."

TABER PUMP CO., Buffalo, N. Y.

Builders of Centrifugal and Rotary Pumps

PUMPS

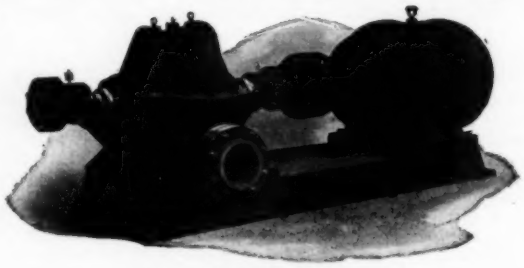
INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

THE GOULDS MANUFACTURING COMPANY
SENECA FALLS, N. Y.

GOULDS

Aurora Centrifugal Pumps



Type OMD

Aurora pumps are made in many types, to meet all conditions found in the paper mill field.

We specialize in horizontally and vertically split open and inclosed impeller, single and multi-stage and deep well turbine centrifugal pumps as well as deep well reciprocating pumps.

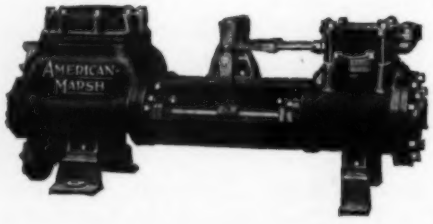
A card from you stating your conditions places our engineers at your service and results in a saving to you.

AURORA PUMP & MFG. CO.

Home Office and Factories, Aurora, Ill., U. S. A.

AMERICAN-MARSH PUMPS

SIMPLEX—DUPLEX—CENTRIFUGAL

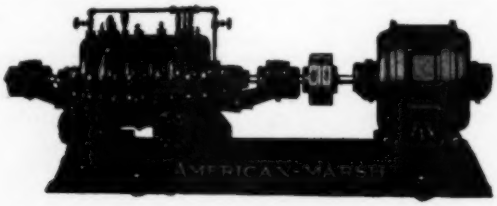


ALL American-Marsh Pumps, whatever the type, are heavily constructed with the best of material and workmanship. They are the result of over 35 years' experience in the building of high grade pumping machinery. Every pump is given a thorough test under actual working conditions before shipment.

There are over 165,000 in successful operation.

The line includes:

Boiler Feed Pumps
Suction Box Pumps
Wet and Dry Vacuum Pumps
Air Compressors
Bilge Pumps
Condensation Pumps
Centrifugal Pumps
Paper Stock Pumps



Write for bulletin covering type in which you are interested

AMERICAN STEAM PUMP COMPANY

BATTLE CREEK, MICH.

this month from 110-12 Greene street to 119-24 West Twenty-fourth street, New York, where larger quarters have been secured.

William G. MacNaughton, secretary of the Technical Association of the Paper and Pulp Industry, with headquarters at 18 East Forty-first street, New York, has been elected to the Board of Governors of the Canadian Club in this city.

The Federal Pulp Wood Corporation, of New York, has been granted a charter of incorporation with a capital comprising 100 shares of common stock. The incorporators were F. H. Jaeger, N. M. Stewart and F. C. Scofield.

S. J. Blake, formerly with the Sill Paper Company in this city, is now New York representative for W. C. Hamilton & Sons, Inc., of Philadelphia, with offices in the Fifth Avenue Building, 200 Fifth avenue, New York.

The Tension Envelope Company, with an envelope manufacturing plant at 87 Thirty-fourth street, Brooklyn, has filed notice of an increase in capital stock from $300,000 to $400,000.

W. E. Byron Baker, chief chemist of the York Haven Paper Company, York Haven, Pa., was married on May 17 to Miss Mary Elizabeth Kopf, of Brooklyn, N. Y., the wedding taking place in Brooklyn.

The Royal Card & Paper Company, jobbers of 132-136 West Fourteenth street, New York, has opened a branch sales office at 20 Clinton street, Newark, N. J., in charge of Samuel Feinblatt.

S. J. Fisher, Inc., dealers in paper mill supplies and specializing in old rope and bagging, are now located at 239 Front street, New York, having moved from 309 Water street.

The J. J. Murphy Paper Company, jobbers of 97 Prince street, New York, has filed notice of a capital reduction from $125,000 to $75,000.

Franklin Stetson

Franklin Stetson, wholesale paper salesman connected with the West Virginia Pulp and Paper Company, died on May 19 at his home, 143 East Thirty-ninth street, New York, at the age of 48 years.

Mr. Stetson's great grandfather, Thomas Rice, built one of the first paper mills in America at Newton Lower Falls, Mass. His grandfather, Alexander H. Rice, continued the business, being also Mayor of Boston in 1854-55 and was three times Governor of Massachusetts. Franklin Stetson, after a course in chemistry, entered the Keith Paper Company's mills at Turners Falls, Mass., as a rag picker and ending as superintendent. His first position as a paper salesman was with the J. E. Linde Paper Company in New York City, next with W. H. Parsons, and for many years thereafter with the West Virginia Pulp and Paper Company.

Wisconsin News

June 1, 1924.

Slackening Demand Felt in Wisconsin

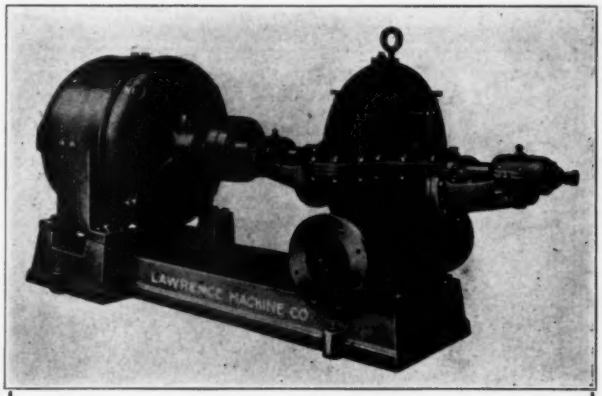
Business conditions generally are reflected in a slowing down in operations of paper mills of the Fox river valley as shown in a recent survey. The slump in business is reported, however, to be less marked in the paper industry.

There was seen to be a feeling among paper manufacturers that conditions will improve as the summer advances, as there is known to be no great stocks on hands.

None of the Fox river valley mills were found to be entirely closed, although some of them are running light a portion of the time. This is done by either closing down a machine here and there temporarily, or operating shorter hours. Sales departments reported orders to have been erratic for some time, frequently coming in, in bunches and with a quiet interval in between.

With a presidential election coming on and the political situation showing many elements of uncertainty, very few manufacturers of this district are showing a disposition to manufacture for stock. Paper is being turned out to fill orders booked and manufacturing right now closely represents sales conditions, which are described as "spotty."

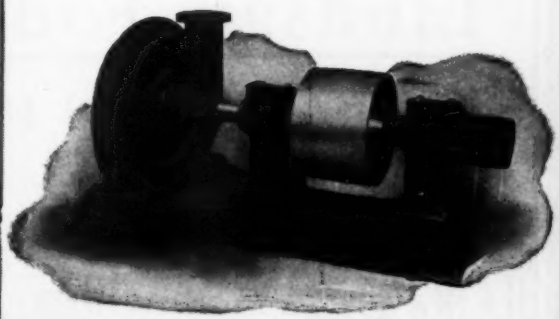
As far as operating conditions are concerned there are no



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

CENTRIFUGAL PUMPS
for



Water, Acid and Stock

Manufactured By

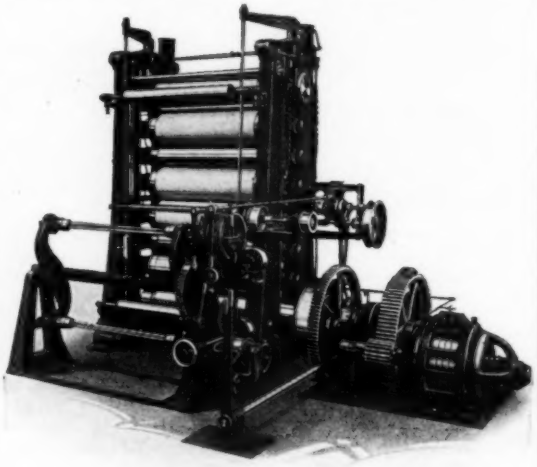
E. M. Cross Mach. Co.
BERLIN, N. H.

We build traveling crane and portable elevators of many types for both hand and electric operation.

Ask for Crane Catalog 100
Portable Elevator Catalog 105

New Jersey Foundry & Machine Co.
90 West Street New York

NORWOOD
SUPER CALENDERS



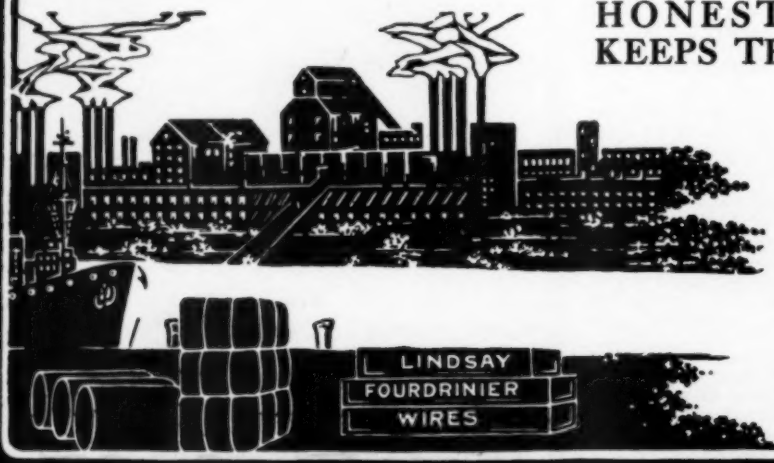
WE ARE SPECIALISTS IN
Paper Finishing Machinery

NORWOOD ENGINEERING CO.
FLORENCE, MASS., U. S. A.

Real Merit Placed

Lindsay Fourdrinier Wires

In Many Mills



HONEST SERVICE
KEEPS THEM THERE

They are ready to serve you

The Lindsay Wire Weaving Company
Collinwood Sta., Cleveland, Ohio
"Ask any Papermaker"

complications at the present time. There is plenty of labor, skilled and unskilled, at normal wages and no labor troubles seem to be in prospect. The mills are well supplied with pulpwood, all having loaded up during the winter months, and practically no shipments are now in transit. Power conditions are slightly out of normal. There is plenty of water, in fact more than the mills can use, and in one or two cases backwater is interfering with operations to a slight extent.

Marinette & Menominee Plan Large Building Program

According to reports received the Marinette & Menominee Paper Company has announced a large construction program on their property at Marinette, Wisconsin. It is understood this will include the construction of a new machine room, the installation of a new paper machine and also the construction of a new dam across the Menominee River. It is expected that work on these new projects will be started at once.

The new paper machine will be a Yankee type machine. This machine will be located in the new machine room that is to be constructed between the present No. 1 and No. 2 machines in the Park mill. By so doing it will only be necessary to construct two new walls, a roof and floor, as the end walls of the present building can be used.

It is understood that this machine will have a capacity of 18 tons per day, and when this new machine is running it will make a total of 5 machines that will be operating at the Park mill. This will bring the total capacity to 110 tons of paper.

The new dam will be located a short distance below the present structure. This will be of concrete and steel construction and will be equipped with 9 gates. The length of the new dam is 500 feet and when completed will greatly increase the power facilities of this company. Work will start immediately on this project.

New Manager for Great Western

Mr. Harry Ballou, general manager of the Great Western Paper Company of Ladysmith, Wisconsin, has tendered his resignation, and he has been succeeded by Mr. H. H. Fish, Jr., who prior to this time was assistant general manager of that company.

Both Mr. Fish and Mr. Ballou have been with the company for 3½ years at which time the property was purchased by this company of the Menasha Paper Company.

Mr. Fish, Jr., is the son of Mr. H. H. Fish, Sr., who is the president of the above company. It is understood that Mr. Fish is leaving for a trip to Colorado and California.

Protest Height of Wisconsin River Dam

An adjournment to allow the parties involved time to negotiate an agreement, was taken by the Wisconsin Railroad Commission after a hearing at the city hall of Stevens Point on May 23rd, in the application of River Pines Sanatorium and the Oneida Power Company for an order fixing the level of water at the dam of the Wisconsin River Pulp and Paper Company.

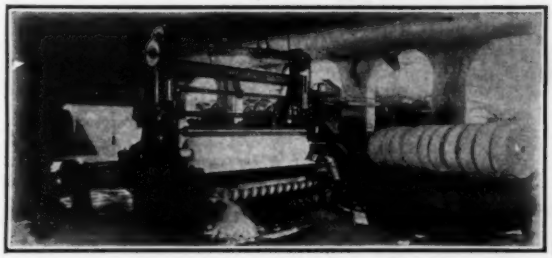
The meeting held at Stevens Point, as an adjournment from a previous one at Madison, involves besides the Wisconsin River Company, the Sanatorium and the Oneida Power Company, an adjunct of the Consolidated Water Power & Paper Company, the R. K. McDonald interests, and several west side property owners of the city of Stevens Point, Wisconsin.

The River Pines is asking an order to prevent the Wisconsin River Pulp and Paper Company from raising the height of its dam. Dr. J. W. Coon testified that during freshets the sanatorium property was flooded by water backed up by the Wisconsin River Company's dam, and that at present the basements of the building there were flooded and had to be drained by electric pumps. Closer regulation of the head of water by the dam is asked.

Increasing the head of water maintained by the Wisconsin River dam causes the tail race in the Consolidated Dam at Stevens Point to raise and lessen the amount of power which can be developed by the head of water maintained by the Consolidated, it was stated by Mr. T. W. Brazeau, Wisconsin attorney, for the Oneida Power Company.

After 32 years of activity in the wholesale paper business, Frank G. Smith, president of the paper company of that name operating in Milwaukee, has sold his business to Val Blatz, Jr., and A. W. Asmuth. Mr. Asmuth is a Neenah paper manufacturer and Mr. Blatz comes of the Milwaukee family of

TRADE
CAMACHINE
MARK
ROLL-WINDERS



CAMACHINE 18 serving as winder in paper mill

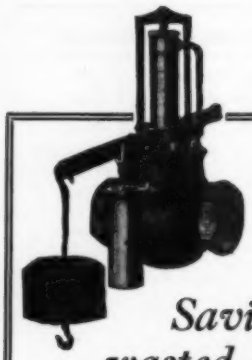
The Little Ones Make the Big Ones

MANY years ago our original slitting and roll-winding machine, CAMACHINE Universal Type 6, started to make a name for itself as an efficient producer of small to medium size rolls of paper. Today this same CAMACHINE 6 is second to none in its particular field. But there was a demand for a machine which would handle wider webs and wind bigger rolls, and gradually a complete line of machines was developed. Along came CAMACHINE 8, then CAMACHINE 10, both built on the same time-tested basic principles of operation originating in CAMACHINE 6. As these machines became better known among practical mill men, a demand arose for machines to handle the heavier end of paper and board mill roll production.

This brought forth CAMACHINE 12, CAMACHINE 14 and CAMACHINE 18, which serve either as winders or rewinders in an ascending scale of web widths, web speeds and roll diameters. Thus CAMACHINES in appropriate sizes and types now cover every possible roll requirement from midget rolls weighing ounces to jumbo rolls weighing tons. There must be a good reason for this steady growth: we think it is because CAMACHINES are doing their work in a dependable and economical way.

Will you let us "sit in" when you are considering ways and means to cut costs in roll production? A word from you will bring a written or personal response from us.

CAMERON
MACHINE COMPANY
61 POPLAR STREET BROOKLYN, NEW YORK



Saving steam often wasted on auxiliaries

YOUR cooking and drying processes and your auxiliaries don't need the same steam pressure that your prime movers need; steam furnished them in excess of their proper requirement is deliberately wasted.

The Davis Pressure Regulator furnishes the means for reducing steam at an excess pressure to any lower level required. It maintains that reduced pressure with a minimum of attention, because it has no springs, diaphragm, packing, or auxiliary valve. The oil-filled dash-pot insures steady service without chattering. You can see it work, and test it by hand.

The Davis Catalog will be sent to any executive interested in this proved method of steam saving. Address the G. M. Davis Regulator Co. at 414 Milwaukee Ave., Chicago.

DAVIS VALVE
STEAM SAVERS SINCE 1875
SPECIALTIES

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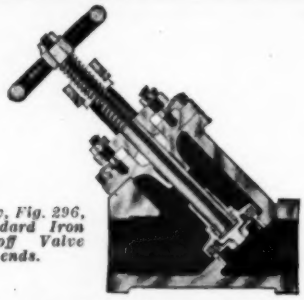

Sectional view, Fig. 296, Jenkins Standard Iron Body Blow-off Valve with screwed ends.

For severe boiler blow-off use

Valves to withstand satisfactorily the strains and hard usage involved in boiler blow-off work, must be sufficiently strong and correctly designed. This is particularly true when scale or sediment is entrained in the boiler water, since under these conditions the boiler is blown down several times a day.

The Jenkins Blow-Off valve has a clear through passage for the water, mud and scale. Due to the clear passage, this valve satisfactorily handles heavy, thick fluids.

Jenkins Valves are made in bronze, iron and steel, in types and sizes for practically all requirements. At supply houses everywhere.

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80 White Street.....New York, N. Y.
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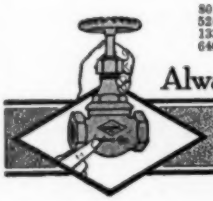
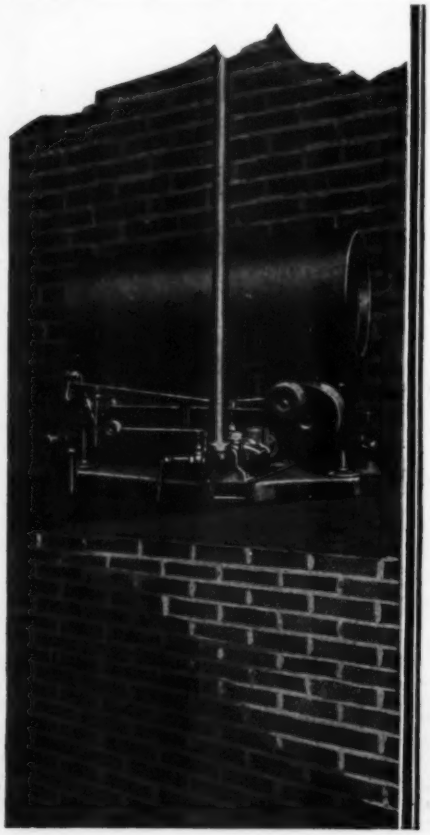


Always marked with the "Diamond"
Jenkins Valves
SINCE 1864



Condensation May Be Eating Into Your Profits

Condensation is not an item of expense that shows up in your profit and loss statement, but it is a definite factor in your overhead nevertheless. Every month your accountant writes off a certain definite amount of money and charges it to condensation—whether he knows it or not.

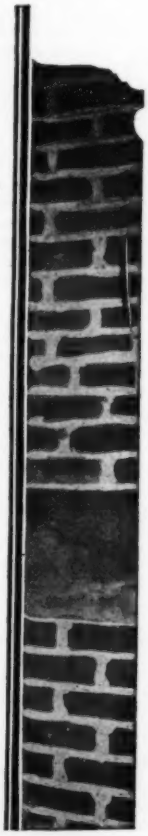
Condensation retards steam circulation and cools your paper machines, dryers, evaporators or mill heating system.

You can't prevent the formation of condensation, but you can drain it as it forms and return it to the boiler at high temperature with a Morehead Back-to-Boiler System.

Your steam will circulate freely and your equipment will function at a high efficiency point. You will no doubt be interested in reading a number of reports from plants where Morehead Back-to-Boiler Systems are effecting big savings. Write for them.

Morehead Manufacturing Co.
Dept. O, Grand River Ave. at Warren
Detroit, Mich.

Morehead
"BACK-TO-BOILER-SYSTEM"
POSITIVELY DRAINS ALL TYPES OF STEAM APPARATUS, DELIVERS CONDENSATION AND FEED WATER TO BOILERS UNDER ALL CONDITIONS AT MAXIMUM TEMPERATURE



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brewers, but is interested in candy manufacturing. Mr. Smith, who is 61 years old, expects to retire from all business and devote his time to rest and recreation.

Consolidated Water Signs Contract with Unions

The Consolidated Water Power & Paper Company of Wisconsin Rapids, Wisconsin, has signed their annual agreement with the three unions to which most of the employees of this company's Wisconsin Rapids and Biron mills belong. It is understood that the contract just signed is about the same as that which was signed a year ago. This contract will remain in effect until May 1, 1925.

Representatives of the local unions, and also representatives of the International headquarters of the different organizations, and officials of the Consolidated Company had the conference at which the agreement was signed. The different unions to which the men belong are: International Brotherhood of Pulp, Sulphite, and Paper Mill Workers, International Brotherhood of Paper Makers and International Brotherhood of Electrical Workers.

This agreement only applies to the Wisconsin Rapids and Biron mills of this company, as it is understood that a separate agreement has been negotiated at the Stevens Point, Wisconsin, plant.

Tomahawk Kraft Starts Mill

The new plant of the Tomahawk Kraft Paper Company of Tomahawk, Wisconsin, has started operation. Things were started up gradually and in a short time the whole plant will be in operation.

The new mill is considerably larger than the old one, it being necessary to construct a new wood room, digester and wash room and a new chemical plant. A new dam and power house, one of the finest in the state, was erected at the power site at Grandmother Falls, the power development having been completed some time ago.

This mill was purchased from the Pride Pulp and Paper Company just a year ago and the work has been pushed so that within a year's time a completely new mill stands making Kraft paper. The old mill manufactured paper from de-inked stock. All of this de-inking machinery was removed.

The new plant is modern in every respect and many labor saving devices are used.

Riverside Installs New Machine

The new paper machine in the Riverside Fibre and Paper Company's new mill in Appleton has been installed and after a thorough "tuning up" which has been going on under the watchful eyes of expert erectors from the factory, is about ready to get into normal production.

As soon as final adjustments have been completed and the new machine is operating at full speed the company plans to move the machine in its present mill on the west side of Lake street to its new location immediately south of the new machine.

The machine room in the new mill is well lighted and ventilated and is one of the best appointed in the Fox river valley.

The company's new offices are about completed and the pipe connections between the new building and the filtering plant have been constructed.

Combined Locks Floats New Bond Issue

The Combined Locks Paper Company, of Combined Locks, Wisconsin, have just made a new issue of $1,400,000.00 of first mortgage 6½ percent serial gold bonds, this being made through the Federal Securities Corporation.

These bonds are dated May 1, 1924, and are due serially beginning May 1, 1925, with $50,000.00, and in lots then up to $100,000.00 a year up to May 1, 1939, when they will be required.

The Pulp Wood Company of Appleton has been awarded compensation for overcharges on freight by the Interstate Commerce Commission. The shipments were from Neopit, Lily and Crandon, Wis., on the Soo Line and were made when the road was under federal control.

The No. 1 machine at the Great Western Paper Company's plant at Ladysmith on Thursday of last week broke a record for production when it manufactured thirty-three tons of newsprint in twenty-four hours. The machines operated the full twenty-four hours without a shut-down.

FOSTER "Class G" PRESSURE REGULATOR

is particularly adapted for intermittent service. Accurate and reliable on severe and exacting requirements where close regulation is important. Suitable for 350 lbs. initial pressure.

EFFICIENT NOISELESS DURABLE

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Ticonderoga Machine Works

TICONDEROGA, N. Y., U. S. A.

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WARREN IMPROVED PATENT DOUBLE DRUM WINDERS

Patent BALL VALVE Hydrant
Stock Circulating Systems *and*
other Paper Mill Specialties

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POWELL VALVES

"Pilot" Gate Valves

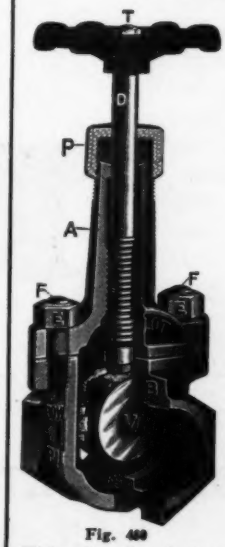


Fig. 469
Write for descriptive Circular

All iron or iron body with steam bronze trimmings. Simple in construction.

Working Pressures up to 125 lbs.

Economical and Reliable

Sizes ¼ to 3"

Avoid disappointment in Valve Service by specifying POWELL VALVES

The Wm. Powell Co.

Cincinnati, Ohio

FOR SALE

One large type Marshall refining Jordan engine, used very little. EDDY PAPER CORP., Three Rivers, Mich.

Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers
RITER-CONLEY COMPANY
General Offices, Pittsburgh, Pa.

FOR SALE

Two (2) Fitchburg Steam Engines 40 H. P., 125 lbs. steam pressure; 20 lbs. back pressure; 70 to 125 R. P. M. Length of engine, 12'6"; width of engine, 6'8". These engines can be direct connected or a belt drive and are in A-1 condition.

Three (3) Noble & Wood 1,000 lbs. capacity Beating Engines; wood tub; 48 x 48" roll; 72 x 16½" pulley. These Beaters are in good condition.

Two (2) 63" Smith & Winchester Undercut Paper Cutters.

Address Box 62, Paper Industry.

FOR SALE

One 120" Fourdrinier Paper Machine—Equipped with New Century shake; two presses; 48" diameter dryers; calender; reel; Warren winder and self contained Marshall drive.

Dryers—Two 48" x 111". Fourteen 36" x 86". Nine 36" x 80". Seventeen 36" x 62". Eight 48" x 62". Twenty-one 28" x 62".

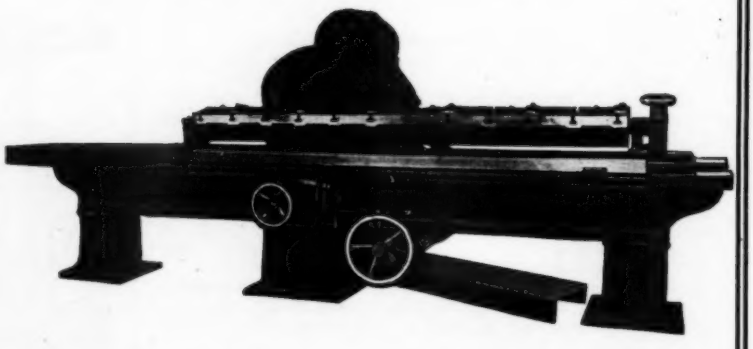
Slitters and Winders—One 82" Langston two drum. One 80" Pusey & Jones two drum. One Moore & White four drum. One 36" Fales. One 27" Meisel.

Wet Machines—Two 72" Bagley & Sewall. One 56" Black and Clawson. One 48" Horne.

FRANK H. DAVIS CO.
175 Richdale Ave. Cambridge 40, Mass.

The "Bridgeport Safety" Sectional Wheel Paper Knife Grinder

TYPICAL of the high quality of "Bridgeport Safety" product is a Paper Knife Grinder installed in a Massachusetts Paper Mill in 1919 which has ground the knives so true, according to the Superintendent, that springing and shimming is unnecessary to get a perfect cut. They are well satisfied—you would be, too.



This is the strong rigid machine you need. Get details today. Catalog for the asking.

THE BRIDGEPORT SAFETY EMERY WHEEL CO., Inc.
103 Knowlton Street BRIDGEPORT, CONN.

New England News

June 1, 1924.

Pulpwood Rate Hearing Resumed

Hearing on the Maine Central R. R.'s increases on pulpwood effective as of February 5, last, were resumed in the Senate Chamber of the Maine state house at Augusta on May 6. Attorney Frederick Ives of the New England Paper & Pulp Traffic Association called as his first witness Chester L. Whittemore, traffic manager for the same Association, who testified to the various increases in pulpwood rates on the M. C. since 1908. The advances he pointed out were an increase of from 87 percent to 205 percent of the 1908 rates. Important individual rates such as that from Portland, Me., to Rumford, Me., it was noted had been raised from $1.10 per hundred pounds in 1913 to $2.60 today.

Important testimony was introduced in the record of the four day hearing by Wilbur LaRowe of Boston, attorney for the International Paper Co., who brought out the fact that a contract had existed between the Maine Central R. R. and the Bangor & Aroostock road since 1918, by which the Maine Central obligated itself to accept very small divisions on the through rates on potatoes, lumber, pulpwood and paper. Inasmuch as the Central's entire reason for desiring higher pulpwood rates was its necessity for increased revenue it was pointed out by Mr. LaRowe that here was a more equitable and just source of revenue.

Joseph A. Warren, mill manager of the S. D. Warren Co., at Cumberland Mills, Me., told of the hardship inflicted by high pulpwood rates in competition with outside mills. He instanced his company's own soda pulp mill at Yarmouth, Me., which was closed last year because of southern competition, one of the deciding factors in the case being the high rates paid for the rail movement of pulpwood.

It is believed that an excellent impression for the plaintiffs was made on the Public Utilities Commission and hope for a suspension of the rates is bright. Over twenty of the largest New England paper mills are affected.

Purchasing Agents Propose New Standard System

Purchasing agents of the entire country gathered in Boston during the week of May 19 to 24 for the ninth annual convention and informal show which was staged in conjunction with the convention at Mechanics Hall. Two group conferences on paper were held, the second of which was addressed by S. L. Willson, president of the American Writing Paper Co. of Holyoke, discussing the important new decimal standard system for the calculation of paper, which met with general approval among the purchasing agents but was rather strongly opposed by some paper jobbers. Paper manufacturers as a whole seem to favor the idea.

Briefly the system as proposed involves the following, according to Mr. Willson: To adopt 24x40 or 1,000 square inches as a standard area unit for manufacturing; to adopt 1,000 square sheets as a standard unit for count; to adopt 1,000 sheets of 1,000 square inches as the standard unit for substance or weight, the substance number corresponding to the actual weight of the unit area and count. The plan eliminates reams.

Northeastern Supts. Plan Large June Meeting

What promises to be a most interesting and enjoyable meeting of the Northeastern Division of the American Paper and Pulp Mill Superintendents' Association, will be held at Cumberland Mills, Me., on Friday, June 27. Lunch will be served following which the guests will visit the S. D. Warren Co. mills. A business session will be held in the afternoon as well. At one point during the tour of inspection of the Warren mills an address will be given by W. W. Spratt, general engineer of the Westinghouse Electric Company, on Power Factor Correction and Regulation as Applied to the Pulp and Paper Industries.

That evening there will be a shore dinner at the Dunscroft, and a paper will be given by O. M. Porter, secretary-treasurer of the Woodlands Section of the American Paper and Pulp Association. The ladies will have lunch at the Lafayette Grill and will visit places of interest around Portland, joining the men for the trip to the Dunscroft.

In anticipation of later requirements the S. D. Warren Co. is starting a summer pulpwood drive. Early in May their crew commenced cutting operations in Washington county, Maine. To stimulate production the company is paying for this work by the cord with a bonus of 35c per cord in addition to the straight $4 per cord for every cutter producing in excess of 100 cords in a season.

Desirable Used Equipment

2—42x11½x50 hydro pneumatic accumulators. Designed for 300 lbs. air service. Equipped with Watson-Stillman automatic regulator.

2—15 and 26x20x24 Compound duplex Laidlaw compressors. Pressure 80 lbs. Cap. 2,570 cu. ft. at 150 r.p.m.

2—9½x5x10 right and left hand, air jacketed, steam driven compressors. Operate at 150 lbs. pressure. Receive air at 120 lbs. pressure, and deliver at 300 lbs. pressure.

16—823 h.p. Babcock & Wilcox Stirling water tube boilers, Class M-30, 200 lbs. pressure. Complete with Westinghouse stokers, forced draft fans, Vulcan soot blowers, and all accessories.

2—300 h.p. Heine boilers, 150 lbs. pressure. Murphy stokers and accessories.

1—160" Buffalo steel plate induced draft fan.

2—120" Buffalo steel plate induced draft fans.

10—Connersville 26"x36" horizontal top discharge gas blowers, capacity 24.5 cu. ft. per rev. at 4.58 lbs. per sq. in. at 255 r.p.m.

3—Roots No. 3 pressure blowers. Cap. 2.38 cu. ft. per rev. at 10 lbs. pressure.

1—No. 5 Allis-Chalmers vertical jet condenser.

2—No. 30 Schutte & Koerting multi-jet condenser.

6—18"x36" Allis-Chalmers 350 h.p. Corliss engines. Heavy duty mill type.

1—40 KW Sprague Electric Works direct current generator. 120/125 volt, compound wound.

1—G. E. 75 K.W. motor driven exciter set, Generator compound wound, Form A, Type RC-16, 600 amp. 125 volts D. C., 1200 r.p.m.

125—Motors, ¼ to 150 h.p. Write for list.

40—Transformers, 10 to 600 KVA, write for list.

3—8" 3-stage Alberger-Curtis steam turbine driven boiler feed pumps.

10—25 and 38x4-⅝x24 Worthington tandem compound duplex pumps.
Write for list showing over 200 centrifugal, diaphragm, and steam pumps.

12—Kellog hammer welded steel autoclaves, 300 lbs. working pressure. Tested to 1,000 lbs.

35—Continental Iron Works welded steel digesters. Cap. 1,300 cu. ft. Pressure 110 lbs.

500—Steel tanks, 100 to 55,000 gal. capacity, ⅜" to ⅝" plates. Write for Bulletin No. 7.

3—Dorr re-action tanks, 10'x10', complete with agitators and steam coils.

15—Carloads valves and fittings, ¼" to 16". Write for list.

1—110' Fixed radius Link-Belt crane, with 5½ yd. bucket.

Write for prices and specifications

Nashville Industrial Corporation
OLD HICKORY TENNESSEE

FOURDRINIER WIRES

Dandy Rolls *Cylinder Molds*

Brass, Copper and Iron Cloth

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WIRE SIGNS

Cheney Bigelow Wire Works

Established 1842 SPRINGFIELD, MASS.

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. INTERNATIONAL TRADING CO., Philadelphia, Pa.

New President I. P. Co.

Archibald Richardson Graustein, the new president of the International Paper Co., who has been selected as head of the biggest paper company in the world by Malcolm Chace of Boston and his associates, is considered one of the most brilliant lawyers ever produced in Boston.

He is a graduate of Harvard, class of 1904, and took his LL.B. at Harvard Law School in 1907. His brilliant record in college attracted the attention of the famous law firm of Ropes Gray, Boyden and Perkins, who immediately on his graduation offered him a job. He rose rapidly and is now a member of this firm which is one of the largest and best known in the country. He has been practically the directing head for two years of the Riordon Co., Ltd., the Canadian paper company. He came in contact with them first as attorney for some of the bondholders affected by the company's failure. He is thoroughly versed in paper company problems. Mr. Graustein thus succeeds Philip T. Dodge, who requested that he be relieved of these duties. Mr. Dodge will remain with the company, however, as he has been elected chairman of the board, a newly created office.

Mr. Dodge has been president of the International Paper Co. for ten years, becoming its chief executive in 1913. During his administration the company has made steady progress. It entered the hydro-electric power field, converting some of its newsprint mills to the production of other grades of paper. Since 1899 no dividends have been paid on the 200,000 shares of common stock, the earnings being put back into plant improvements. Carrying out this policy has enabled the company today to point to an unusual record of expansion during the past ten years.

Announcement was made by the President of the Purchasing Agents Association, Charles A. Steele of Philadelphia, that "the Paper Committee has been co-operating with the Department of Commerce in simplifying sizes of rolls and sheets of paper, with the result that where formerly it has been customary for paper jobbers to stock many sizes, they now limit their stocks to many fewer sizes. George Heintzemann, chairman of Secretary Hoover's Committee on Simplification of Paper Sizes, has repeatedly said that this simplification has been made possible because our own national Catalog Committee brought the opposing paper interests under neutral auspices and showed then the value of cooperation for mutual benefit." It was announced at the first conference of the Paper Committee that before the end of June the Bureau of Standards will issue a list of standard sizes for bond and ledger papers.

It is encouraging to note that steady improvement in the operating conditions at the American Writing Paper Co. under Receiver Willson are being reflected in the only securities which are admitted to have any equity in the company, the first mortgage 6 percent bonds. They have recently sold up to 50 as compared with a low for the year of 35. Selling at recent prices the bonds are quoted on a basis of only 25 percent of the appraised value of the entire property.

A storage building is being constructed for Crocker Burbank & Co. As., on the corner of Westminster Hill road and Sanborn street, Fitchburg, Mass. The contractors are Siley & Foss, Central street, Fitchburg. The structure will be of two stories, 121 by 54, at a cost of $32,000.

The will of George W. Wheelwright, Sr., until his death recently chairman of the board of the George W. Wheelwright Paper Co., has been filed for probate in the Suffolk, Boston, court. George W. Wheelwright, Jr., as executor filed a bond of $600,000.

Despite the recession in operating figures of leading New England paper mills, one of the largest drives of pulpwood logs ever brought out of the upper Androscoggin was driven to the mills of the International Paper Co. and Brown & Co., in early May.

American Chemical Society held its 195th annual meeting in connection with the Rhode Island Section of the company at the mills of Bird & Son, at East Walpole and Norwood, Mass., on June 6. Plant visits were arranged for all the visitors.

Bird & Son, Inc., have inaugurated a policy in all their mills of allowing summer vacations with pay to all operating and maintenance employes of the company who have been with Bird & Son for over ten years.

The Interstate Commerce Commission denied a petition of the Universal Paper Bag Co. of New Hope, Pa., for reparation on freight rates paid on paper shipped from the Great Northern Paper Co.'s plant at Madison, Me., to New Hope. The Maine Central, the originating carrier, contended that high cost operating conditions on this line made the rate imperative.

The superintendents and foremen of the S. D. Warren Co. enjoyed a get-together at Camp Shelldrake on May 27. Sports of various kinds featured the meeting and informal discussions of mill problems were engaged in.

Maine to Fight Budworm

The Maine Forest Service is experimenting along a line that promises to go far in exterminating the budworm pest, whose destruction of spruce and fir has been appalling in New England and eastern Canada. Clean cutting of an infected area stops the depredations of the budworm, but it is often difficult for the paper or pulp companies to get into these remote stands and log them off immediately.

The Forest Service is endeavoring to discover if girdling will not be just as effective as clean cutting. The trees could then be left standing until the owners were able to log them off. The trees could be left in this condition several years without important loss by rot, but when actually felled they must be logged immediately, if rot is to be avoided. The entire state will be mapped in the course of this process and areas where outbreaks are likely will be examined annually by state foresters. When an outbreak occurs the girdling will be effected.

MILL EXECUTIVE

available for position; liberal education, six years' experience in mechanical and electrical engineering, eight years in charge of board mills, age 35. Address Box 66, The Paper Industry.

JUST ISSUED!

Materials Testing Methods

A practical handbook for paper mill chemists compiled by the Committee on Standard Methods for Testing Materials Used in the Paper Industry

The methods approved by the Committee and used in the leading paper mill laboratories include thirty of the materials in most general use. Among them are Alum, Bleach, Casein, Paper Fillers, Aniline Dyes, Pigment Colors, Glue, Lime, Rosin Size, Starch, and many others.

In paper, $3

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Sturtevant Drying Systems
You can remove damp steam as it forms; prevent roof drips; dry sheets evenly; reduce felt and press roll crowning bills; and increase production and profit by installing a Sturtevant System.
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Digester, Acid Proof and other Guaranteed Linings
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James L. Carey
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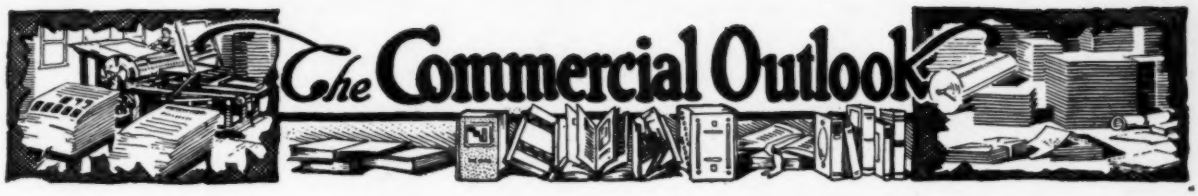

New York, June 2, 1924.

IT IS quite apparent that the quietness in business generally is affecting activity in the paper market. Demand for some kinds of paper has slowed down to a very noticeable degree, so much so, in fact, that mills in certain cases have found it necessary to materially curtail their production in order to keep output within the bounds of consumers' requirements. On the other hand, there are some branches of the paper industry experiencing better than normal activity —notably news print manufacturers and roofing paper mills —and it can be said that the movement of these descriptions of paper is of such volume as to serve to offset to some extent the relatively slower movement of other kinds of paper.

One thing seems certain and that is that the paper market —from the standpoint of demand—is in a very healthy condition at present. Few consumers or jobbers are undertaking purchases other than to cover direct needs. In fact, it might be stated that demand is principally of hand-to-mouth character, buyers operating when in want of supplies and invariably limiting their orders merely to amounts of paper to serve their immediate requirements. This in itself should eventually lead to a broader demand for paper. The time is coming when consumers and jobbers are going to resume buying on a normal scale, that is not only against direct needs but also in anticipation of future wants, and when this time arrives it is more than likely the industry will enjoy a period of very brisk and voluminous demand.

The price situation is not altogether satisfactory to manufacturers. It can be said that quotations on most kinds of paper have steadied and that manufacturers are exerting effort to keep them maintained on fairly stabilized levels. However, the desire for business is causing some producers to cut prices with a view of corraling as many orders from competitors as possible, and this obviously makes for a certain degree of uncertainty in values, and probably prevents consumers from buying in as large volume as they would if prices were stable.

That paper production is on a far from low level is shown by the last monthly summary of the industry issued by the American Paper and Pulp Association, covering the month of March. The total output of paper of all kinds in the United States in that month, according to the summary, amounted to 449,313 net tons, showing a substantial increase over the 423,489 tons produced in the preceding month. Moreover, the summary indicates that the movement of paper from mills into consuming channels was proportionately larger in March than in February since mill stocks at the end of March were smaller than at the close of February despite the 26.000 tons increase in production. Mill stocks at the end of March totaled 223,693 net tons of paper of all kinds, against 226,000 tons held by mills at the end of February. The report shows that paper production in March was approximately 5 per cent greater than in the preceding month.

Newsprint demand is holding up to a high level. Publishers are printing big issues and it is reported that circulation is steadily growing. There is a consistent absorption of deliveries against contracts, and transient demand is active, publishers frequently finding it necessary to augment their supplies through spot purchases. All talk of a price reduction in newsprint has ceased since the International Paper Company and other large producers announced they had extended contracts with publishers to run until the end of 1924 at a minimum price of $70 per ton f. o. b. mills throughout the year. Rumors that Canadian mills were contemplating a cut in price of $5 a ton have been repeatedly denied by prominent interests. Opinion in the trade is that there is nothing to warrant a reduction in price, and that no more business would be gained by such action.

Production of newsprint in the United States in April totaled 128,249 net tons, compared with 119,098 tons in March. In the first four months of this year the output was 495.396 tons, against 488,396 tons in the same time last year. Production of Canadian mills was also higher, totaling 115,572 tons in April, contrasted with 112,538 tons in March, while in the first four months of 1924 the output amounted to 449,649 tons, showing an increase of 12 per cent over the 399,993 tons produced in the corresponding period a year ago. Production in the two countries increased 6 per cent this year as compared with 1923.

Book paper demand is gradually broadening, and most mills are better fixed with orders than in some time. Contract mills especially are well sold up and in some cases are not promising deliveries within a month or six weeks. Prices of book paper are steady at around an average basis of 6.50 cents per pound f. o. b. mills for a fair quality of M. F. book paper.

Coarse papers are comparatively quiet. Manufacturers of wrapping still have to contend with foreign competition and the market apparently is over supplied. Tissues also are in limited demand though quoted prices are maintained.

Fine papers are wanted in moderately good amounts. Perhaps the movement has decreased slightly in the past month but writing paper mills as a rule are managing to operate on a fairly large scale, while prices are steady.

Building papers are in good call, possibly better than since the first few weeks of the year. There is a fair demand for specialties, particularly cover papers.

Box boards are in slack demand in so far as volume is concerned. Consumers are buying in a consistent manner but only to cover immediate needs, and most board manufacturers are operating their plants on curtailed schedules. Prices are rather unsettled with plain chip board quoted in the East at $40 per ton delivered New York and filled news board at $42.50 and even down to $40.

For Better Forestry Laws in Michigan

The Michigan conference sponsored by the Rotary Club of Kalamazoo, and in particular by the paper manufacturers of this state, has resulted in a decision to begin at once on the formation of an association to promote the establishment of a workable forestry policy for the state, one which will encourage the growth of timber by private land owners.

The meeting was chiefly attended by the 150 members of the Kalamazoo Rotary Club, and the Michigan paper manufacturers, with representatives from the lumber industry in other parts of the state, and with Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, as the chief speaker.

The Rotary Club and the other invited guests were given a dinner by the Bryant Paper Company in their new office building and the result was the appointment of the following committee representing both the lumber and paper manufacturers, to work out a definite plan of a state-wide organization:

John W. Blodgett, Grand Rapids, former president, National Lumber Manufacturers Association;

Felix Pagenstecher, Bryant Paper Co., Kalamazoo;

Harry E. Fletcher, Fletcher Paper Co., Alpena;

William L. Saunders, Cummer-Diggins Lumber Company, Cadillac;

Herman Lundeen, of Lewiston, author of the forestry bill passed by the last state legislature, but vetoed on technical grounds.

The conference adopted the following resolutions:

"WHEREAS, the forests of the United States are being cut and burned faster than they are being replaced by growth, and

"WHEREAS, the wood using industries of the country are forced to pay heavy and increasing freight bills and even to import a portion of their needs, and

"WHEREAS, the paper industry is dependent upon the forest for the bulk of its raw material, and

"WHEREAS, there is now before Congress proposed legislation which seeks to provide an adequate forest policy for the United States,

"BE IT RESOLVED, that the Kalamazoo Rotary Club hereby approves the McNary-Clarke bills and urges their immediate passage by Congress.

"BE IT FURTHER RESOLVED, that this meeting appoint a Committee to form a permanent organization of the Wood Using Industries of the state for the purpose of formulating and applying a forest policy to the forest lands of Michigan."

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Papermaking Rags

Distinctly different conditions exist in the two major branches of the papermaking rag market. New rags of nearly every grade display considerable firmness, whereas the old grades are mostly moving to lower price levels. Demand from paper mills is fair but as is the usual situation at this time of the year consumers are buying mainly to cover direct requirements and seem little concerned over future needs.

Probably the fact that available supplies are lighter than is ordinarily the case is the principal reason for the firmness in prices of new cuttings. Operations in the clothing manufacturing industries in the last several months have been on a narrow scale; retail demand for apparel has been limited and manufacturers consequently have curtailed production of clothing to a marked extent; therefore not as much cotton goods has been cut up as in times when business in clothing has been livelier, and fewer rags have been produced. Moreover, the movement of cuttings to paper mills has been fairly consistent for some time. Most papermakers have purchased conservatively but they nevertheless have been more or less in the market as buyers and have absorbed new rags in moderately large volume, so that demand for cotton cuttings of most grades has kept pace with the production.

Added to this situation of supply and demand, a strike of clothing workers is scheduled to go into effect in New York City and also in other large clothing manufacturing centers on June 1. In Greater New York alone something like 40,000 garment makers are expected to join the strike, which obviously will mean the production of cotton cuttings will be reduced to a minimum. Dealers, realizing the bullishness of the outlook, have been firm in their demands for at least certain prices for cuttings and have not hesitated to refuse to sell unless receiving the prices quoted.

On the other hand, there is a downward trend to prices of some of the grades of old papermaking rags. The decline in roofing stock has been of persistent character for the past month. Not only have domestic roofing rags receded in value but foreign stock also has dropped in price. Slight declines have been recorded in some quarters in prices of thirds and blues, and certain grades of old white rags have eased a little in value also.

Everything considered, rag prices today are much above a normal market level. Despite the sharp decline in some descriptions from the top prices prevailing early in the year, paper manufacturers are finding it necessary to grant relatively high prices for rag stock. In view of this it might be regarded as a safe assertion to make that market levels will be lower before the decline which set in several months ago is fully spent. Certainly it would appear likely that roofing rags will recede further before the decline is checked; on the other hand, dealers in general look for roofing rags to stage a "come back" in the late summer or early fall, and advance many reasons why prices should rise at that time.

The influx of papermaking rags from abroad into the United States continues heavy. Possibly there has been a little slowing down in the movement as result of the fall in prices but May imports were large, and the fact that consuming mills continue to receive big amounts of rags from Europe while paper business has decreased has permitted them to reduce their buying in the domestic market to some extent. Prices have reached levels, however, where dealers abroad are objecting to marketing their rags in the U. S., and it is quite probable importations will show a decided drop in the next several months which may oblige consumers to operate more extensively as buyers in the domestic market and thus send values of domestic rags upward.

No. 1 white shirt cuttings are very firmly quoted at a minimum of 14 cents per pound f. o. b. shipping points, and most dealers want beyond this figure. Fancy shirt cuttings are quoted at 7.25 cents at shipping points, unbleached muslins at 12.50 cents, white lawns at 12 cents, blue overall cuttings at 9.50 cents, washable at 6 cents and light silesias at 9.25 cents.

Old white rags are quoted at 7 to 8 cents per pound f. o. b. dealers' points, depending on the quality of packing, for No. 1 repacked whites, and 4.50 to 5 cents for No. 2 repacked whites. The best grades of repacked thirds and blues are bringing around 4 cents or slightly higher at shipping points, while rough blues are a little down in price at 3 to 3.25 cents. Roofing stock is selling in the East at 1.70 cents per pound for No. 1 packing f. o. b. New York, and 1.50 cents for No. 2 grade; in the West slightly higher prices are commonly named. Felt paper mills exhibit little disposition to pay better than 1.60 cents a pound ex dock New York for foreign dark cottons though importers as a rule ask slightly in excess of this basis. Foreign rags in general have experienced a quiet period during the past month.

Average quotations f. o. b. shipping points and ex dock New York follow:

New stock—	New York and Chicago
White shirt cuttings, No. 1	14.00-15.00
White shirt cuttings, No. 2	7.75- 8.00
Fancy shirt cuttings	7.25- 7.50
Washables, No. 1	5.75- 6.00
Unbleached muslins	12.50-12.75
White lawns	12.00-12.25
Overall cuittings, blue	9.50- 9.75
Black silesias	5.75- 6.00
Light flannelettes	9.75-10.00
Canton flannels, bleached	11.75-12.00
Canton flannels unbleached	11.25-11.50
Shoe cuttings, bleached	9.75-10.00
Shoe cuttings, unbleached	9.00- 9.25
Light silesias	9.25- 9.50
O. D. khaki cuttings	5.75- 6.00
Mixed khaki cuttings	5.25- 5.50
Corduroy cuttings	3.75- 4.00
Cottonade cuttings	4.50- 4.75
Linens, No. 1 white, foreign	16.00-17.00
Light prints, foreign	6.50- 7.00
Old Stock—	
Whites, No. 1, repacked	7.00- 8.00
Whites, No. 2, repacked	4.50- 5.00
Whites, house soiled	3.75- 4.00
Whites, street soiled	3.25- 3.50
Lace curtains	4.75- 5.00
Thirds and blues, rough	3.00- 3.25
Thirds, and blues, repacked	3.75- 4.25
Black stockings	4.00- 4.25
Cotton canvas, No. 1	4.50- 4.75
White cotton batting	4.25- 4.50
Roofing, No. 1	1.70- 1.90
Roofing, No. 2	1.50- 1.70
Dark colored cottons, foreign	1.60- 1.75
Blue linens, foreign	5.00- 5.50
Gray linens, foreign	6.00- 6.50
White linens, foreign	11.00-11.50
Light prints, foreign	3.75- 4.00

Rope and Bagging

After having displayed much firmness for quite a lengthy spell, prices of old rope are tending lower. The prime reason for this is that demand from paper mills has subsided, probably due to the quieter condition of the paper market which rope papermakers are feeling to the same degree as manufacturers of other kinds of paper. Dealers generally quote 6.75 cents a pound or higher for No. 1 domestic manila rope f. o. b. shipping points but there have been sales at less than this, while foreign manila rope has eased off to around 6.25 cents ex dock New York for No. 1 imported stock. Strings are in fairly steady demand and are quoted 1.40 to 1.50 cents a pound at shipping points for mixed strings and 2.25 to 2.50 cents for sisal strings. Dealers assert that the market is well cleared of stocks of rope and strings and that consequently there is small probability of any severe break in market values.

Old bagging demand is at best limited. Tissue and manila paper mills are buying in a strict hand-to-mouth fashion, and not much interest is shown by roofing paper manufacturers.

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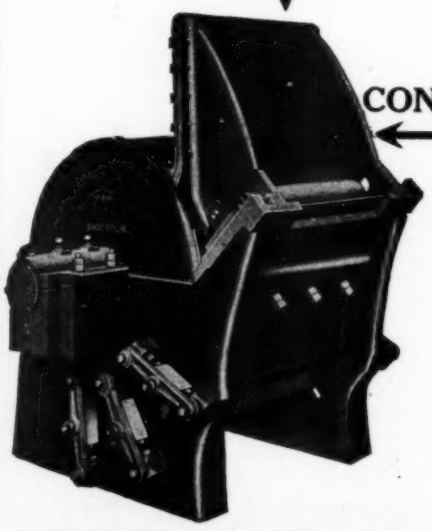


No. 1 scrap bagging of the very best quality is fetching no more than 1.60 cents a pound f. o. b. shipping points and the usual run of packing of this material is available at substantially lower prices. Roofing bagging is quoted at $1 a hundred pounds f. o. b. dealers' shipping points. Scrap gunny is quotably steady and is meeting with a fair call from consuming quarters.

F. o. b. shipping point and ex dock New York quotations are as follows:

	New York and Chicago
Gunny, No. 1 domestic	1.65-1.75
Gunny, No. 1 foreign	1.60-1.70
Scrap bagging, No. 1	1.40-1.60
Roofing bagging	1.00-1.10
Wool tares, heavy	1.60-1.75
Wool tares, light	1.50-1.60
Manila rope, No. 1, foreign	6.00-6.25
Manila rope, No. 1, domestic	6.50-6.75
Sisal strings	2.25-2.50
Mixed strings	1.40-1.50

Old Paper

A somewhat steadier, if not firmer, tone is apparent in the old paper market. This seems to be due to the usual reaction following the decline of prices to very low levels, however, since consumers have not increased their buying to any pronounced extent. Certain paper or board manufacturers have been quietly laying in stock at the low prices prevailing but there has been no consistent movement of any importance in any single direction and practically all grades of waste paper have felt the depression and the marked weakness in prices.

Packers in numerous cases have so diminished their collection operations that they haven't anything like normal amounts of old paper to dispose of. Furthermore they are frequently refusing to accept orders from mills at the prices bid, and assert they will not resume collecting on the usual scale until they can see a profit in sales to consumers. Shavings have eased in price to where sales of No. 1 hard white have been made in New York at 3.15 cents per pound f. o. b. that city although dealers mostly quote a little above this figure. No. 1 soft white shavings are selling at 2.40 to 2.60 cents a pound at shipping points, depending on the quality of packing. Ledger stock is quoted at 1.35 to 1.60 cents per pound, heavy No. 1 book at 1.20 to 1.40 cents, crumpled book stock at 1.00 to 1.15 cents, and old No. 1 kraft at 1.65 to 1.85 cents. Folded newspapers are bringing 65 to 75 cents a hundred pounds f. o. b. shipping points, and No. 1 mixed paper 50 to 60 cents. Dealers in the Middle West are frequently quoting beyond these prices on the low grades. The weakness of the New York market, however, appears to be bearishly influencing prices all over the country.

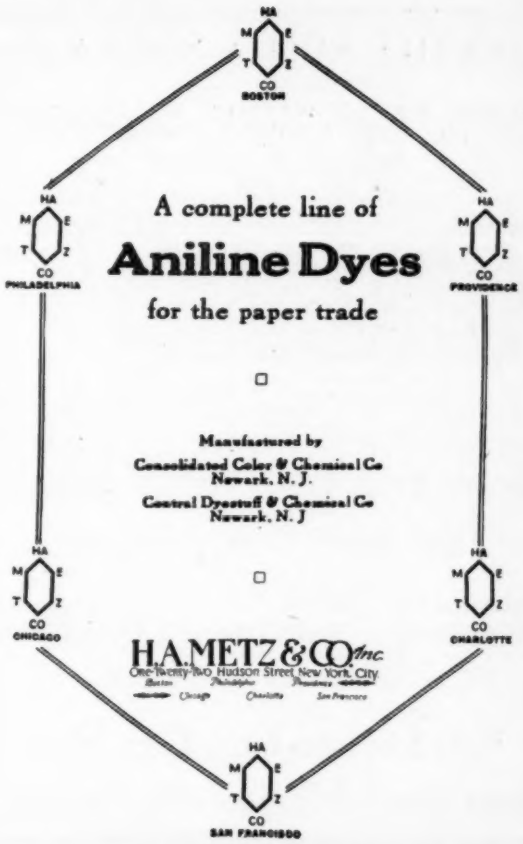
F. o. b. shipping point quotations are:

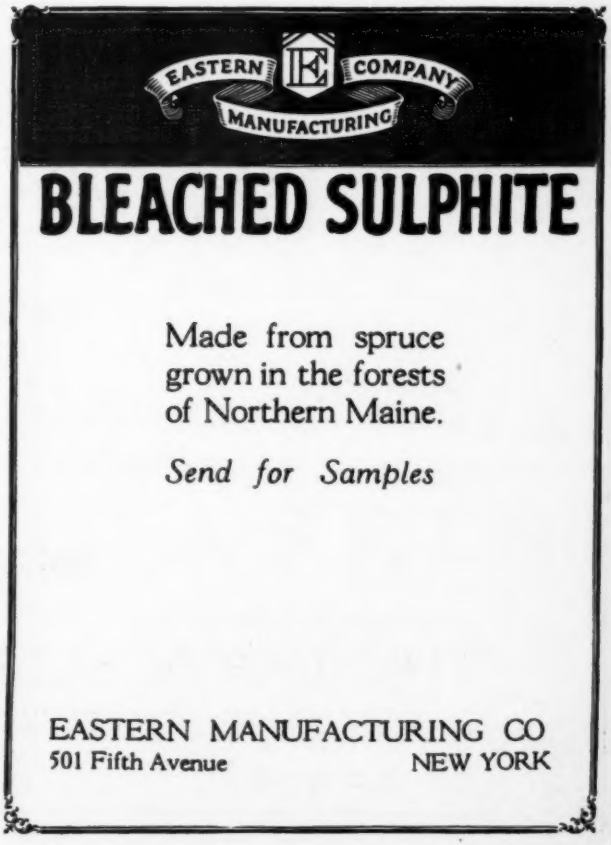
	New York and Chicago
Hard white shavings, No. 1	3.15-3.35
Hard white shavings, No. 2	2.75-3.00
Soft white shavings	2.40-2.60
Colored shavings	1.40-1.60
Heavy book, No. 1	1.20-1.40
Crumpled book, No. 1	1.00-1.15
Ledger stock	1.35-1.60
Kraft, No. 1	1.65-1.85
Manilas, No. 1	.80-1.00
White blank news	1.50-1.65
Over-issue news, No. 1	.85-1.00
Folded news	.65- .75
Mill wrappings	.70- .80
Mixed paper, No. 1	.50- 60
Common paper	.40- .50

Chemical Pulp

Domestic wood pulp manufacturers are, to say the least, having a difficult job securing business these days. Everything seems to be against the U. S. producer of pulp, and the condition of the market is such that some mills are reported to have either greatly curtailed their production or else to have closed down altogether temporarily. Paper and board manufacturers are directing their attention to foreign pulp, which is being marketed at prices against which the domestic industry can scarcely afford to compete and which is available in plentiful enough supply to fill the bulk of the requirements of paper mills.

There are some pulp mills, of course, which dispose of most of their output on contract that are moderately well engaged. The movement toward consumers on contract comprises a considerable tonnage of pulp, but insofar as transient demand is concerned, domestic producers find it a difficult mat-





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ter to share in the business available to the extent that they ordinarily do when pulp market conditions are more normal. If anything, the tone of quoted prices is a little firmer than it was a month or so ago. This is the season when arrivals of pulp from abroad are limited owing to Swedish manufacturers waiting for the opening of navigation over the Baltic, and consumers in some cases have filled in their stocks in recent weeks through purchases of domestic fibre, which has had the effect of steadying market quotations. However, current business is of very unsatisfactory character, and numerous complaints regarding ruling market conditions are heard.

Bleached sulphite is quoted from 3.75 up to 4.25 cents per pound f. o. b. pulp mills for No. 1 grade. Unbleached sulphite is quoted at around 2.70 cents for average quality sulphite, while bleached soda pulp is selling at 3.50 to 3.75 cents at producing mills. No. 1 kraft pulp is quoted at 2.50 to 3 cents at shipping points.

F. o. b. pulp mill quotations are as follows:

Bleached sulphite	3.75-4.25
Easy bleaching sulphite	2.75-3.00
Unbleached sulphite, No. 1	2.60-2.90
News grade sulphite	2.40-2.65
Soda pulp, bleached	3.50-3.75
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.50-3.00
Screenings, refined	1.50-1.75

Mechanical Pulp

Reports generally tell of a fairly good demand for mechanical pulp. It is observed that consumers with few exceptions are buying chiefly in a hand-to-mouth manner, ordering today the supplies they require tomorrow, but the movement into consuming channels nevertheless is of a volume which can be called close to normal for this period of the year. One of the strong factors in the market is that most domestic grinders are using up all the mechanical pulp they grind, thus diminishing the amounts directed to the open trade, and in frequent instances obliging consumers to look to Canadian mills to fill their wants.

Quotations have shown little or no change in recent weeks. About the lowest price reported in the market is $27 a ton f. o. b. grinding mills, and it is said that this figure is named by producers across the Canadian border where a heavy freight is necessary to transport the pulp to consuming points in the U. S. Most domestic manufacturers ask around $30 a ton at grinding mills for prime spruce ground wood for prompt shipment, and in instances where a low freight is involved it is said this price is being exceeded in transactions.

Not much Scandinavian ground wood is on offer in the market. The strike of Norwegian paper and pulp mill operatives has so reduced production in that country that shippers have little supply to send to America. Moreover, prices abroad are beyond a parity with our market, which automatically curtails the movement of supplies in this direction. Importers state it is necessary for them to secure around $33 a ton or higher ex dock New York for Norwegian ground wood to realize a profit on inportations.

Chemicals

Paper mills are engaging in current buying of chemicals on a rather narrow scale. A steady and fairly large movement of most commodities is proceeding against contracts but fresh demand is slow to develop for the reason a majority of consumers are getting along with contract commitments without having to augment their supplies. Casein is quoted at 10 to 11 cents a pound, with duty paid on the foreign product, and some substantial shipments have been received recently from abroad. Bleaching powder is steady at around 2 cents per pound f. o. b. works for spot shipment. Caustic soda is quoted at 3.10 to 3.20 cents a pound, and soda ash at around 1.40 cents per pound.

Average quotations are as follows:

Alum, lump ammonia	3.25- 3.50
Alum, lump starch	3.75- 4.00
Blanc, fixe, powdered	3.75- 4.00
Bleaching powder	1.90- 2.10
Brimstone (long ton, at mine)	20.00-22.00
Casein (duty paid)	10.00-11.00
Caustic soda, spot delivery	3.10- 3.20
China clay, domestic washed	12.00-15.00
China clay, foreign	15.00-20.00
Rosin, grade E	5.80- ——
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.35- 1.50
Starch, papermakers', in bags	3.40- 3.70
Talc (ton)	16.00-17.00

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Caustic Soda
Over 75 stock distributing points assure prompt shipment with minimum transportation charges.
The Solvay Process Co.
Detroit, Mich.; SYRACUSE, N. Y.; Hutchinson, Kas.
Sales Division
WING & EVANS, Inc.
40 Rector Street, New York
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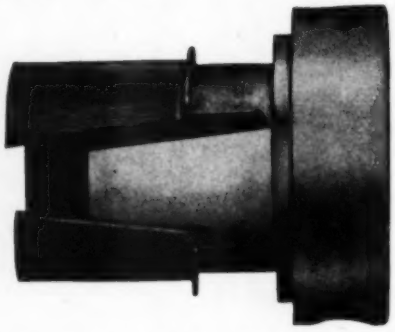
STANDARD BLEACHING POWDER
Manufactured by
Pennsylvania Salt M'f'g Co.
PHILADELPHIA, PA.

CASEIN
Standard Quality
Lowest Prices
The Casein Manufacturing Company
15 Park Row New York

THE ONEIDA CHUCK for use with Paper or Strawboard Cores



This chuck is so designed that it cannot split or damage the paper core on which the paper is wound and allows the roll to be run down to the last thickness of paper.

The conical or wedge-shaped chucks now commonly used with paper cores invariably split the paper cores so that from ½" to 1" of paper next to the core is damaged. The elimination of this waste will soon pay for the equipment on each machine.

Our Chuck allows the use of a cheap non-returnable paper core that once used can be thrown with the waste and sold.

Let us make up a trial set for you

ONEIDA CHUCK COMPANY
RHINELANDER, WISCONSIN

Any Diameter
Any Thickness
Any Length
for
Any Purpose

SONOCO
FIBER TUBES, CORES AND CENTERS

Please send us samples and specifications for quotation.

Sonoco Products Co., Mfr.
HARTSVILLE, S. C.

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PAPER MAKING **MACHINERY** PAPER CUTTING
PAPER BAG MAKING

THE
SMITH
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WINCHESTER
MFG. CO.

ESTABLISHED 1828
AT
SOUTH WINDHAM
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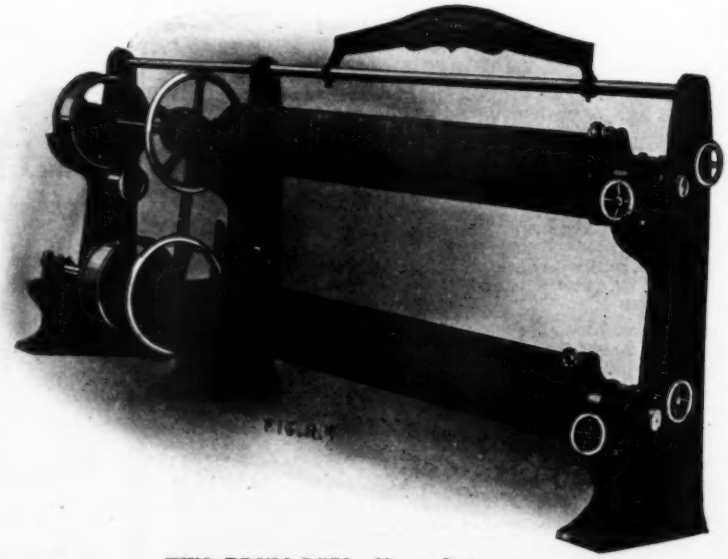

TWO DRUM REEL—Heavy Pattern

New Papers

Writing—	
White rag	20-45
White sulphite	11-30
Colored rag	16-40
Ledger—	
White rag	20-50
White sulphite	13-30
Colored sulphite	40-30
Colored rag	16-50
Bonds—	
White rag	19-45
White sulphite	9-30
Colored sulphite	10-30
Colored rag	18-45
Book—	
No. 1 S. & S. C.	6.25- 7.00
Machine finished	6.00- 6.75
English finished	6.25- 7.00
Coated and enameled	8.00-14.00
Lithographed, M. F.	9.00-15.00
Newsprint—	
Rolls, contract	3.75- 4.00
Rolls, transient	4.00- 4.25
Sheets	4.25- 4.50
Side runs	3.25- 3.75
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24-36	.70- .75
No. 1 manila, 24-36	.70- .75
Kraft	1.00- 1.25
Wrapping—	
No. 1 Kraft	6.00- 6.75
No. 2 Kraft	5.25- 5.75
Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	52.50-57.50
Plain chip	40.00-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

New Process Saves Shavings

From Eugene, Ore., comes a report of a new process of producing paper pulp from wood, in which shavings and similar cull material of the ordinary paper pulp mill may be included to give a satisfactory pulp for making heavy grades of dark paper. The new process has been developed by Dr. Alfred Tingle, former research chemist for one of the leading pulp and paper mills of Canada.

Dr. Tingle has been experimenting at the University of Oregon laboratories at the invitation of Dean O. F. Stafford, who recently developed a process for utilization of mill waste in the carbonization and wood distillation industries.

In Dr. Tingle's new pulp making process all danger of overcooking smaller pieces of wood waste, while larger pieces remain uncooked, is avoided. Dr. Tingle also says the new process is much simpler and is less expensive.

The application of Dr. Tingle's "digestion" method, which he believes may prove applicable to waste products of the lumber industry, will produce a product which can compete with Kraft pulp when applied to high grade spruce chips, Dr. Tingle predicts.

Mr. C. D. Price, who for many years has been connected with the Industrial Works at Bay City, Michigan, recently as traveling service engineer, has now been appointed district sales manager of the St. Louis district with headquarters at the Railway Exchange Building, St. Louis, Missouri.

Forest Experiment Advisory Committee Meets

A meeting of the Advisory Committee of the Lake States Forest Experiment Station was held at the Kitchi Gami Club at Duluth, Minnesota, on May 19th.

Mr. Raphael Zon, the director of the Lake States Forest Experiment Station reviewed the purpose and scope of the experiment station work. Mr. Zon then introduced a tentative program of work which the Lake States Forest Experiment Station wish to take up during the next year or two which was put up to the Advisory Committee for their approved. This is as follows:

1—Studies leading to more effective forest protection: (a) Analysis of available forest fire data to determine the normal occurrence of forest fires as to time and place; prevailing causes; effect of date of occurrence, character of cover, speed of attach, etc., on number, size and severity of fires; as a basis for more effective organization of the protective forces. (b) Relation of weather conditions to the occurrence, size and severity of forest fires as a basis for forecasting emergency conditions.

2—A review of work already done in the Lake States along reforestation lines to determine the most practicable method of reforestation; the most promising species, the cost, and the returns to be expected; as a basis for future States and private reforestation enterprises.

3—Studies of the present and possible yield of second growth jack pine and hardwood stands; as a basis for determining their value and importance as a source of future timber supplies.

4—Studies to determine the best method of handling virgin beech, birch and maple, and swamp forests to secure highest yield and to keep them continuously productive. (a) Selection vs. clear cutting. (b) Cost and results of various methods of slash disposal. (c) Effect of drainage on growth and yield of swamp forests.

5—Thinning studies in jack pine to determine the possibilities of increasing yield.

6—Studies of forest insect pests and methods of control.

7—A study of the value of forest litter as a factor in soil fertility and the deteriorating effect of forest fires.

8—Incidental to the above the Station is interested in various economic problems such as the relation of forestry and agricultural development, forest taxation, and the development of forestry in the region although no specific projects along these lines can be undertaken at this time.

After some discussion it is understood that this program was approved by the Advisory Committee.

The rest of the time was spent in taking up the general program, and a general discussion was had on this.

From the above it will be noted that the Lake States have outlined a very large program for the protection, preservation and reforestation of the forests in this area, and we are sure that a considerable amount of good will develop from it.

Canada's Pulp and Paper Export

The flow of newsprint to the United States continued in March above normal and reports received by the Canadian Pulp and Paper Association's office in Montreal indicate the probability that April will show still better results, Consul General Halstead reports. Of the March shipments, amounting to a total of 127,583 tons, valued at $9,756,330, the United States received 125,848 tons, value at $9,617,823, the only other newsprint exports of any importance being to South Africa and New Zealand, which took 599 and 1,027 tons, respectively.

Other paper exports during March consisted of 161 tons of book paper, valued at $28,157; 2,121 tons of Kraft wrapping paper, valued at $323,108; 844 tons of other wrapping papers, valued at $134,395; 200,700 pounds of bond and writing papers, valued at $20,049; 493,028 rolls of hanging and wall paper, valued at $74,419; and paper board to the value of $329,171. The total value of paper and board exports reaching $10,604,573, showed an increase of 25 percent in value over February exports, and 10 percent over that for March, 1923.

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Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
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The **B C QUALITY PULPS** INC.

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"HAFSLUND BEAR"
Bleached Sulphite

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"FORSHAGA"
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Extra Strong Kraft

KOOS BAC
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Extra Strong Kraft

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The survival of the fittest

The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
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COTTON, JUTE AND FLAX WASTES
EAST INDIA MERCHANDISE

BRANCH OFFICE
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SWEDEN

EXPORTS

Exports of paper from the United States in March, 1924, showed a decrease of 2½ percent in value compared with February last, and of 10 percent compared with March, 1923, according to Department of Commerce statistics. The apparent decline in the total exports in March, as compared with February particularly, appears to be due rather to a decrease in prices than in the volume of goods shipped abroad, since in nearly every case where there is a decrease in the quantity exported the decrease in value is greater in proportion.

In a number of items, such as book paper, surface-coated paper, tissue paper, and boxes and cartons, in which there was a very substantial increase in the amount shipped, the value of the products fail to show a like gain. Exceptions are greaseproof paper, which showed a gain of 37 percent in quantity and 75 percent in value in March as against February; paper towels and napkins, which increased 13 percent in quantity and 40 percent in value, and photographic paper, which increased 2 percent in quantity and 18 percent in value.

The total exports of paper of all kinds during March were valued at $1,991,345, of which $126,590 represented newsprint paper, $178,481 book paper, $181,341 wrapping paper (not including greaseproof, waterproof and kraft paper), $262,424 paper board and straw board, $119,605 photographic paper, and $104,075 boxes and cartons of paper. All of these except newsprint and paper board represent an increase in value over the previous month, and exports of the latter showed a gain of one percent in quantity, although there was a decrease in value of 8 percent.

Exports of paper and board from the United States during the first three months of 1924 were valued at $6,088,890, a decrease of 4 percent from the same period last year. The decline in the value of shipments during the first quarter of 1924 as compared with 1923 may be ascribed to the same cause as that contributing to the decrease in March exports, namely, a decrease in export prices during that month rather than an actual decrease in the volume of shipments. While the value of March, 1924, exports was under those of March, 1923, exports of January and February both exceeded those for the corresponding months of last year. A few of the more important gains were made in exports of paper board, which increased 75 percent in quantity and 42 percent in value; sheathing and building papers, which increased 85 percent in quantity and 69 percent in value; wall board, which increased 108 percent in quantity and 75 percent in value; and hanging paper, which increased 33 percent in quantity and 40 percent in value. Substantial gains also were registered in exports of kraft wrapping paper, cigarette paper, paper bags, boxes and cartons, and in cash register and adding machine paper.

The following table shows the exports of paper from the United States by principal classes for the first three months of 1923 and 1724:

Class	First quarter, 1923 Pounds	Value	First quarter, 1924 Pounds	Value
Newsprint	8,481,811	$ 427,547	8,805,031	$ 458,084
Book paper	6,757,497	742,788	3,826,871	433,198
Wrapping other than kraft	7,247,848	544,325	5,799,273	505,695
Writing paper	1,729,797	257,486	1,380,742	203,155
Paper board & strawboard	10,758,447	553,290	18,833,006	787,096
Photographic paper	321,161	346,164	33,471	350,840
Hanging paper (yards)	7,312,594	180,102	9,719,086	252,462
Paper bags	2,360,663	229,384	2,228,418	244,655
Boxes and cartons	2,469,031	224,977	3,169,385	266,340
Other paper & paper prod.		2,739,997		2,577,365
Total		$6,246,060		$6,088,890

Other paper and paper products include exports of writing paper, valued at $203,155; surface-coated paper, valued at $153,544; tissue and crepe paper, $168,930; wall board, $167,269; carbon paper, $163,954, and envelopes, $111,322.

A man without a definite life purpose is like a blindfolded duck hunter, sitting in a boat in the middle of the lake, discharging his gun and wasting his ammunition.

IMPORTS

Wood Pulp

Buyers of wood pulp are mostly pursuing a waiting policy at present. This is chiefly explainable by the comparatively slow demand for paper and also by the fact that American paper and board manufacturers have bought pulp abroad for first open water shipment in rather heavy volume, and are consequently holding off in further buying except when in urgent need of additional supplies while waiting for spring shipments to arrive from Scandinavia. There is a spotty demand, mainly for spot lots, but the market has been notably bare of important trade activity in the past several weeks, and consumers seem determined to wait until after the spring delivery of pulp from Sweden or until activity in the paper market increases before resuming purchases on something resembling a normal scale.

The spot situation in foreign pulp seems a little stiffer. The reason, from all indications, is that spot stocks in the hands of importers or speculative holders have been fairly well liquidated. Sales from stock have been going on in a more or less consistent way during the last couple of months whereas holdings have not been replenished, and there are signs that spot supplies in first hands are down to a level where not much pulp is available in New York or other U. S. Atlantic ports. The result is that importers are disposed to name slightly higher prices for such pulp as they have to offer for quick delivery, and consumers, who are buying only when pressed by necessity, are generally meeting the rates quoted.

First open water shipments from Sweden have been started across the Atlantic as navigation over the Baltic Sea has been opened. It is presumed that spring shipments from this Scandinavian source will be heavy this year, judging from all the reports of big buying by American consumers since the first of the year. It is estimated that up to April 1 sales by Swedish manufacturers for delivery during 1924 totaled more than 300,000 metric tons of sulphite and 120,000 metric tons of kraft, which, it is stated, constitutes over 40 percent of the yearly output of Swedish mills. Moreover, it is said that the great bulk of this pulp has been sold to United States consumers and that the orders call for early shipment as soon after the opening of the Baltic as possible. There should consequently be a large movement of supplies from Sweden to this country in the next several months, and paper manufacturers in the U. S., appreciating this and probably expecting prices will be at least slightly affected in their favor, are holding back in buying pending developments.

Imports of wood pulp into the United States during March showed some decline according to the latest figures issued by the Department of Commerce. Total imports of chemical pulp in that month amounted to 77,402 net tons, compared with 110,932 tons imported in February and 79,097 tons in January, while imports of mechanical pulp totaled 20,136 tons, against 15,747 tons in February and 15,768 tons in January.

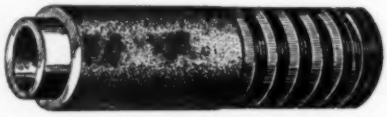
Quotations on bleached sulphite range from about 3.75 cents a pound ex dock New York up to 4.25 cents for No. 1 grade, depending on the quality. Strong unbleached sulphite is selling at around 2.65 cents ex dock New York in most instances although prices, depending on the brand, over and under this level are quoted. Swedish kraft is quoted at 2.60 cents per pound on the dock at New York. Foreign ground wood is quoted at prices beyond a parity with the domestic market and not much business is ensuing. Importers say they should receive at least $32 a ton ex dock New York to realize a profit on ground wood importations.

Late reports say that the strike of pulp mill workers in Norway is nearing a settlement after having lasted several months. This should have an influence on the world situation in wood pulp in due time.

Receipts at the port of New York in May and current market quotations ex dock New York follow:

Standard Wood Pipe

"The Pipe that Stands the Test"



More Durable and Economical

Used extensively by the Paper Industry for conveying paper stock and acids. Especially adapted for conveying sulphite and ground wood.

Has greater carrying capacity than iron pipe, costs less to install and much less liable to freeze than any other type pipe.

Write for catalogue and prices

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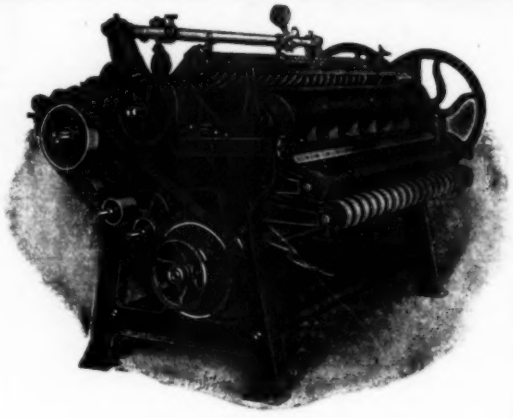
Williamsport, Penna., U. S. A.



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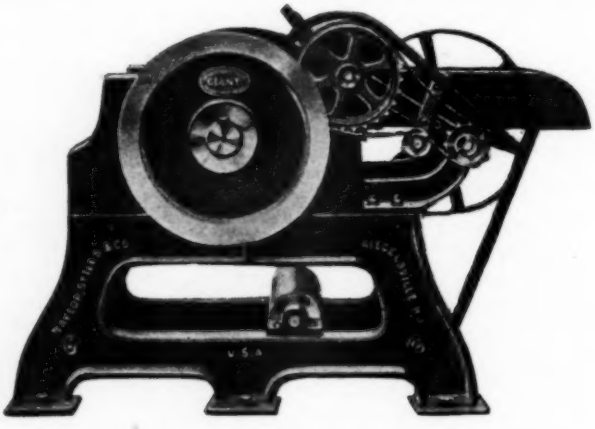

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LET US FIGURE IT OUT FOR YOU

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Bleached sulphite, No. 1	$ 3.65- 4.25
Unbleached sulphite, No. 1	2.50- 3.00
Easy bleaching	2.75- 3.00
Mitscherlich unbleached	2.80- 3.00
Kraft	2.50- 2.75
Ground wood, per ton	30.00-35.00

Castle & Overton, 4,366 bls. from Bremen, 509 from Rotterdam and 250 from Gothenburg; H. Hollesen, 6,378 bls. from Bremen; Kidder Peabody Acceptance Corp., 250 bls. from Christiania; E. Naumberg & Co., 1,000 bls. from Trieste; Scandinavian Pulp Agency, 381 bls. from Gothenburg and 127 from Copenhagen; E. M. Sergeant Co., 1,464 bls. from Gothenburg; Lagerloef Trading Co., 1,977 bls. from Hango; National City Bank, 1,288 bls. from Hamburg; M. Gottesman & Co., 1,700 bls. from Rotterdam; Hartig Pulp Co., 877 bls. from Rotterdam; Johaneson, Wales & Sparre, 450 bls. from Copenhagen and 1,200 from Gothenburg; New York Trust Co., 1,345 bls. from Hamburg; Ira L. Beebe & Co., 164 bls. from Hamburg; Parsons & Whittemore, 900 bls. from Gothenburg; Brown Bros. & Co., 1,500 bls. from Gothenburg; Guaranty Trust Co., 375 bls. from Gothenburg; J. Andersen & Co., 529 bls. from Hamburg; Buck, Kaier & Co., 600 bls. from Copenhagen; Tidewater Paper Mills Co., 24,891 bls. ground wood from Liverpool, N. S.; Order, 100 bls. from Rotterdam, 7,940 from Hango, 12,573 from Vancouver, 573 from Hamburg and 600 from Bremen.

Paper Stock

Importations of papermaking materials other than wood pulp into the United States showed some falling off in May compared with previous months, judging from the arrivals at the port of New York. There were fewer rags imported, and less old rope, bagging and other materials were received. The decline in imports was probably due to the narrower market existing last month, which discouraged importers from bringing stock in from Europe. Imports of papermaking material of all kinds through the port of New York in May, with names of consignees, were as follows:

Old Rope

Brown Bros. & Co., 83 coils and 109 bls. from Hamburg, 497 coils and 113 bls. from Rotterdam, 584 coils from Bristol, 420 coils and 22 bls. from Hull, 62 coils from Newcastle, 127 coils and 187 bls. from Antwerp, 53 coils from Leith, 75 coils from Copenhagen and 27 coils and 10 bls. from Bremen; E. J. Keller Co., 25 bls. from Hamburg; International Purchasing Co., 63 coils from Rotterdam and 52 bls. from St. Nazaire; Mechanics & Metals National Bank, 7 bls. from London; Ancram Paper Mills, 11 coils and 3 bls. from Rotterdam; Katzenstein & Keene, 63 bls. from Barcelona; W. Schall & Co., 73 bls. from Barcelona and 75 coils from Newcastle; Ellerman Wilson's S. S. Line, 271 coils from London; American Line, 92 bls. from Bremen; National City Bank, 175 coils and 39 bls. from Copenhagen and 98 bls. from Barcelona; N. E. Berzen, 11 bls. from Havana; Daniel M. Hicks, Inc., 134 bls. from Marseilles; E. Bers & Co., 38 coils and 24 bls. from Vancouver; Order, 70 coils from Rotterdam and 23 bls. from Barcelona.

Old Bagging

E. Butterworth & Co., 100 bls. from Rotterdam; E. J. Keller Co., 1,517 bls. from Rotterdam, 186 from Antwerp, 170 from Havre and 152 from Liverpool; A. G. Dunn, 150 bls. from Rotterdam; J. Loewith, Inc., 200 bls. from Rotterdam; S. Birkenstein & Sons, 93 bls. from Rotterdam; Equitable Trust Co., 71 bls. from Havre; Prince & Kennedy, 126 bls. from Dublin; Strupp & Co., 115 bls. from Rotterdam; Whaling Waste Products Co., 124 bls. from Havre; L. H. Abenheimer, 225 bls. from Barcelona; Maurice O'Meara Co., 101 bls. from Liverpool.

Rags

E. J. Keller Co., 128 bls. from Amsterdam, 300 from Kobe, 1,129 from Rotterdam, 501 from Antwerp, 24 from Barcelona, 1,007 from Marseilles, 51 from Algiers, 62 from Bordeaux, 400 from Copenhagen, 28 from Manchester, 88 from Havre and 340 from Leghorn; Salomon Bros. & Co., 93 bls. from Hamburg; Waste Material Trading Corp., 111 bls. from Hamburg; S. Birkenstein & Sons, 814 bls. from Antwerp and 570 from Bremen; Daniel M. Hicks, Inc., 361 bls. from Rotterdam, 47 from Havre and 71 from Leith; Wilkinson Bros. & Co., 64 bls. from Rotterdam; E. Butterworth & Co., 183 bls. from Rotterdam; G. M. Graves Co., 70 bls. from Leith and 183 from Rotterdam; Katzenstein & Keene, 128 bls. from Barcelona, 302 from Marseilles and 168 from St. Nazaire; M. Jaffe, 48 bls. from Havana; D. I. Murphy, Inc., 52 bls. from

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AND

Finnish Wood Pulp Union
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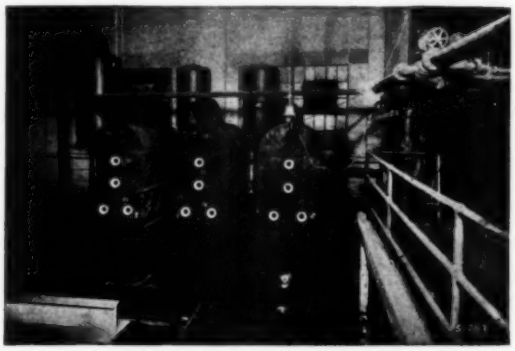

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If you use the soda or sulphate process, Swenson reclaiming machinery will meet every requirement. Our more than 30 years' experience enables us to render you a real service in solving special problems. Our experiment station at Ann Arbor is equipped to make tests on a commercial scale (under the direction of Professor W. L. Badger) on problems involving evaporation, crystallization, heat transfer, etc., at a moderate charge. Whiting Corporation's complete manufacturing facilities are back of Swenson products.

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(Chicago Suburb)

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"MICHIGAN" Combination Steel and Wood Pipe

LONG DISTANCE CONVEYOR OF WATER AND PAPER STOCK IN PAPER AND PULP MILLS—Specially Adapted to Carry Sulphite, Ground Wood and "White Water"

Eighteen reasons why you should use "Michigan" combination steel and wood pipe

1—Durability of Wood Shell. 2—Sanitary. 3—20% more capacity than Cast Iron Pipe. 4—Simplicity in handling. 5—Light in weight. 6—Speed in laying. 7—Protects against freezing. 8—Not affected by Electrolysis. 9—Rigid inspection of materials. 10—Efficient construction of stave. 11—Strength of steel banding. 12—Protection of banding with asphalt coating. 13—Cannot burst under pressure. 14—Can be laid in a wet trench. 15—Short curves without specials. 16—Low installation and maintenance cost. 17—Responsibility of company. 18—Not affected by sulphur or chemical solutions.

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Cleveland, Ohio.....919 Ulmer Bldg.
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Philadelphia, Pa.....318 Widener Bldg.
Pittsburgh, Pa.....323 Fulton Bldg.

"Steel for Strength—Wood for Durability"

Belfast; Strupp & Co., 424 bls. from Hamburg, 265 from Rotterdam and 115 from Bremen; Whaling Waste Products Co., 170 bls. from Rotterdam; Paul Berlowitz, 135 bls. from Rotterdam; Castle & Overton, 71 bls. from Hull, 32 from Belfast and 234 from Rotterdam; Stone Bros. & Victor Galaup Co., 130 bls. from Havre; L. H. Abenheimer, 165 bls. from Havre and 462 from Barcelona; Kidder Peabody Acceptance Corp., 289 bls. from Havre; Goldman, Sachs & Co., 141 bls. from Marseilles, 286 from Bremen and 94 from St. Nazaire; Brown Bros. & Co., 615 bls. from Antwerp, 190 from Bremen, 68 from Venice, 100 from Belfast and 97 from Liverpool; A. W. Fenton, Inc., 89 bls. from London and 189 from Rotterdam; C. G. Keferstein, 220 bls. from Rotterdam; W. D. Lane & Co., 15 bls. from Barcelona; American Express Co., 45 bls. from Glasgow and 16 from Liverpool; Equitable Trust Co., 715 bls. from Antwerp, 1,029 from Barcelona, 121 from Alexandria and 142 from Marseilles; National City Bank, 237 bls. from Antwerp, 30 from Rotterdam and 38 from Barcelona; Guaranty Trust Co., 435 bls. from Bristol, 75 from Genoa, 28 from Havre, 286 from Leghorn, 26 from Venice, 233 from Rotterdam and 60 from Leith; Old Colony Trust Co., 10 bls. from Antwerp; Bank of New York & Trust Co., 104 bls. from Barcelona; Chase National Bank, 44 bls. from Marseilles; Coal & Iron National Bank, 290 bls. from Marseilles and 159 from Antwerp; International Acceptance Bank, 25 bls. from London, 128 from Bremen, 110 from Hamburg, 77 from Antwerp and 104 from Rotterdam; Second National Bank of Boston, 75 bls. from Bremen; Lincoln National Bank, 309 bls. from Bristol; Union National Bank of Philadelpphia, 162 bls. from Bremen; British Bank of South America, 15 bls. from Liverpool; George W. Millar & Co., 47 bls. from Rotterdam; T. D. Downing & Co., 8 bls. from Havre; Ignazio, Abela & Co., 140 bls. from Malta; North German Lloyd, 126 bls. from Bremen; Order, 299 bls. from Barcelona, 169 from Buenos Aires, 200 from Oran, 79 from Havre, 281 from Bordeaux, 243 from Hamburg, 179 from Leghorn, 33 from Venice, 27 from London, 52 from Liverpool and 10 from Colombo.

Miscellaneous Paper Stock

Equitable Trust Co., 470 bls. from Antwerp and 143 from Glasgow; Salomon Bros. & Co., 29 bls. from Hamburg; Anglo-South American Trust Co., 44 bls. from Antwerp; National City Bank, 324 bls. from Antwerp and 61 from Dundee; Guaranty Trust Co., 63 bls. from Dundee and 56 from Glasgow; Brown Bros. & Co., 38 bls. from Leith and 37 from Glasgow; Katzenstein & Keene, 301 bls. from Barcelona; E. J. Keller Co., 110 bls. from Antwerp and 88 from Hamburg; Mech. & Metals National Bank, 10 bls. from Glasgow; Kidder Peabody Acceptance Corp., 49 bls. from Antwerp; Jonas & Naumberg, 12 bls. from London; Irving Bank-Columbia Trust Co., 150 bls. from Dundee; Order, 562 bls. from Dundee, 50 from Antwerp and 5 from Glasgow.

Paper

Probably the feature in importations of paper into the United States during May was the larger receipts of printing paper. While imports of news print were nothing out of the ordinary in comparison with the past year or so, there nevertheless was a larger volume of imports in May than in the several previous months, judging from arrivals at the port of New York. Wrapping paper imports continued fairly heavy, and there were some sizeable amounts of hanging, cigarette, filter, photo and other kinds of paper received. Importations of paper of all kinds through the port of New York in May follow:

Cigarette

American Tobacco Co., 900 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 1,530 cs. from St. Nazaire; De Manduit Paper Corp., 504 cs. from St. Nazaire; Standard Products Corp., 217 cs. from Havre and 12 cs. from Southampton; P. J. Schweitzer, 131 cs. from Havre; Surbrug Co., 18 cs. from Liverpool; E. Waters, 42 cs. from Marseilles; F. P. Gaskell & Co., 38 cs. from Havre; Southern Pacific Co., 3 cs. from Havre.

Printing

J. H. Scott Paper Co., 543 bls. from Hamburg; Young Publishing Co., 373 rolls from Hamburg; International Acceptance Bank, 2,354 rolls from Hamburg; W. Hartmann & Co., 314 rolls from Hamburg; New York & Hauseatic Corp., 202 rolls from Hamburg; American Express Co., 188 rolls from Hamburg; Keuffel & Esser Co., 151 rolls from Hamburg; American Exchange National Bank, 213 rolls from Trieste; B. F. Drakenfeld & Co., 21 cs. from Liverpool; Steffen, Jones & Co., 8 cs. from Antwerp; P. C. Zuhlke, 165 cs. from Antwerp; P. H.

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Cut down *excessive* wrapping paper investment. Why carry two wrapping paper lines for one wrapping paper *purpose?*

MOSINEE

presents a perfect wrapping paper, weight and strength for each wrapping purpose. Made in all weights from 15 pounds to 100 pounds basis. The one complete, standardized and economical line of wrapping paper sold.

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"The Wrapper that Delivers the Goods"

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F. W. ROBERTS MANUFACTURING CO.

All Products Guaranteed to Suit You

STEEL SHELL BURRS YELLOW JACKET SHOWER

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Remember

WM. A. HARDY & SONS

FITCHBURG, MASS.

Originators and Oldest Manufacturers

OF THE

Cast Bronze Screen Plate

ALSO SPECIALIZE IN

Acid Resisting Digester Parts

SCREEN PLATES *and* **DANDY ROLLS**

Watermarking a Specialty

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UNION SCREEN PLATE CO.

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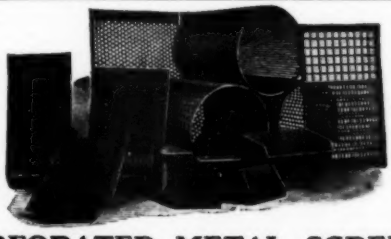
UNION BRONZE SCREEN PLATES

(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

The Witham Screen Plate Fastener, Patented

THE ORIGINAL THE BEST



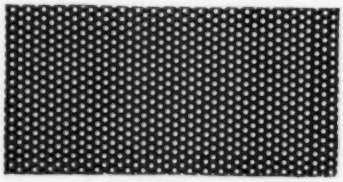
PERFORATED METAL SCREENS

in all metals for pulp and paper mills
Elevator Buckets (Plain and Perforated)
Conveyor Flights and Trough
General Sheet and Light Structural Work
Light and Heavy Steel Plate Construction
Write for perforated metal handbook

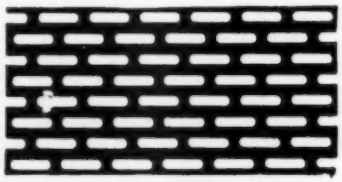
HENDRICK MFG. COMPANY

Main Office and Works 51 Dundaff Street Carbondale, Penna. | 30 Church Street New York City | 544 Union Trust Building Pittsburgh, Penna.

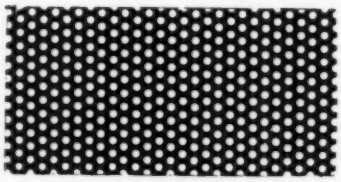
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



1/8 x 1/2" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS **57-65 Fairmount Avenue, Jersey City, N. J.**

Petry & Co., 135 rolls from Glasgow and 4 cs. from Rotterdam; Ryer & Co., 382 cs. from Glasgow; Hudson Trading Co., 17 cs. from Hamburg and 15 rolls from Rotterdam; Chemical National Bank, 2,398 rolls from Hamburg; Bankers Trust Co., 26 rolls from Hamburg; Drinkhansen & Hollkott Paper Co., 209 rolls from Hamburg and 2,485 rolls from Rotterdam; C. G. Keferstein, 105 rolls from Hamburg and 76 rolls from Rotterdam; M. Gottesman & Co., 186 rolls from Rotterdam; J. P. Heffernan Paper Co., 302 bbls. from Bremen and 63 bls. from Trieste; H. Hollesen, 44 bls. from Bremen; Oxford University Press, 5 cs. from Liverpool; Maurice O'Meara Co., 50 bls. from Matanzas, 52 rolls from Antwerp and 207 rolls from Hamburg; Traders Paper Co., 290 rolls from Hamburg; Seaman Paper Co., 449 rolls from Hamburg; H. Lips, 40 cs. from Marseilles; Parsons & Whittemore, 706 rolls from Hango and 899 rolls from Bremen; C. Steiner, 13 cs. from Rotterdam; Bowater Paper Co., 148 rolls from Hamburg; Perkins-Goodwin Co., 45 cs. from Glasgow; Andrews Co., 160 rolls from Hamburg; Dell Publishing Co., 137 rolls from Hamburg; Falsing Paper Co., 579 rolls from Hamburg; E. Naumberg & Co., 720 rolls from Hamburg; Equitable Trust Co., 1,557 rolls from Hamburg; S. S. Alcorn, 77 rolls from Hamburg; Holmes Paper Co., 116 rolls from Hamburg; Street & Smith Publishing Co., 176 rolls from Hamburg; New York Trust Co., 585 rolls from Trieste; Wilkinson Bros. & Co., 63 rolls from Hamburg; P. Puttmann, 80 cs. from Antwerp; Ladenburg, Thalman & Co., 100 rolls from Genoa; Order, 486 bls. from Bremen, 40 cs. from London, 797 rolls from Hango, 154 rolls from Hamburg and 191 rolls from Copenhagen.

Wrapping

Wilkinson Bros. & Co., 130 bls. from Hamburg, 352 rolls and 387 bls. from Gothenburg and 2,288 rolls and 162 bls. from Rotterdam; J. P. Heffernan Paper Co., 155 bls. from Hamburg, 340 bls. from Gothenburg and 165 bls. from Rotterdam; National City Bank, 102 rolls from Hamburg; Birn & Wachenheim, 22 bls. from Rotterdam; Chase National Bank, 16 rolls and 34 bls. from Hamburg; Lay Lugo Paper Co., 20 bls. from Hamburg; W. Schall & Co., 74 bls. from Hamburg; Corn Exchange Bank, 1,877 rolls from Gothenburg and 718 rolls and 103 bls. from Hamburg; J. W. Banker, 67 bls. from Gothenburg; Forbes Paper Co., 13 bls. from Gothenburg; D. S. Walton & Co., 907 rolls from Gothenburg; Arkell Safety Bag Co., 52 rolls from Gothenburg; Brooklyn Standard Bag Co., 409 rolls from Gothenburg; Charles F. Hubbs & Co., 89 rolls from Gothenburg; C. K. MacAlpine & Co., 125 rolls and 94 bls. from Gothenburg; M. M. Cohen, 299 rolls and 82 bls. from Gothenburg; Ringel Bros., 39 rolls ad 22 bls. from Gothenburg; T. G. Miller Paper Co., 965 rolls and 14 bls. from Gothenburg; International Acceptance Bank, 89 bls. from Hamburg; Maurice O'Meara Co., 536 bls. from Rotterdam and 14 bls. from Hamburg; Martin Walsh, Inc., 44 bls. from Rotterdam; Republic Bag & Paper Co., 6,152 rolls and 188 bls. from Rotterdam; Hudson Trading Co., 165 rolls from Rotterdam; Steffen, Jones & Co., 9 cs. from Rotterdam and 505 bls. from Hamburg; Gibson Bros., 891 rolls from Hamburg; L. Moritz & Co., 380 bls. and 69 rolls from Hamburg; W. Hartmann & Co., 5 bls. from Hamburg; Fernstrom Paper Co., 57 bls. from Gothenburg; C. G. Vinans & Co., 686 rolls and 67 bls. from Gothenburg; American Trading Co., 44 bls. from Gothenburg; Chatham & Phenix National Bank, 223 rolls from Gothenburg; National City Bank, 94 bls. and 10 rolls from Hamburg; Order, 5,576 rolls and 233 bls. from Hamburg, 817 bls. from Gothenburg and 131 bls from Rotterdam.

Writing

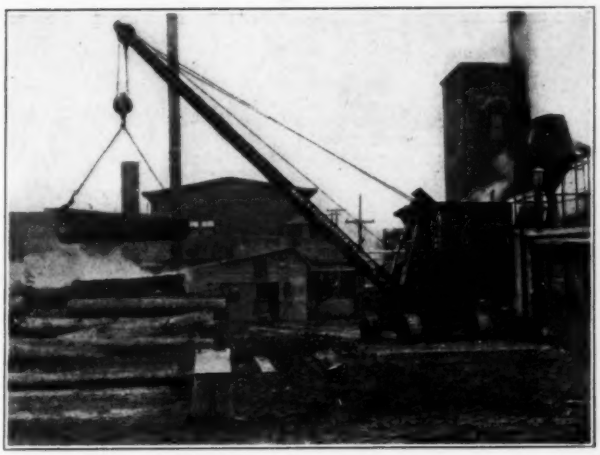
Guibont Freres & Co., 18 cs. from Southampton and 56 cs. from Havre; O. G. Hempstead & Sons, 19 cs. from Bremen; J. W. Hampton, Jr., & Co., 14 cs. from Hamburg; C. H. Boulin, 20 cs. from Havre; Order, 2 cs. from London and 9 cs. from Havre.

Drawing

E. Dietzgen & Co., 26 cs. from Rotterdam and 98 cs. from Hamburg; Favor, Ruhl & Co., 1 cs. from London; H. Reeve Angel & Co., 4 cs. from London; Globe Shipping Co., 13 cs. from Bremen; G. W. Sheldon & Co., 2 cs. from Havre; Keuffel & Esser Co., 21 cs. from Hamburg; Order, 2 cs. from Liverpool.

Filter

E. Feugera & Co., 103 cs. from Bordeaux; Zinkeisen & Co., 5 cs. from Hamburg; H. Reeve Angel & Co., 25 bls. from Bordeaux and 35 cs. from London; J. Manheimer, 115 bls from Bordeaux; G. Lueders & Co., 12 bls. from Bordeaux; A. Giese & Son, 40 bls. from Bordeaux.



TYPE T CRANE USED BY GOSHEN VENEER CO.

Specially Built to Suit the Capacity of Your Mill

The cost of handling pulpwood and logs is surprisingly low when you use a crane that is designed especially for your mill.

To buy a machine simply because the manufacturer builds only a certain size is poor economy. Our cranes range in capacity from 5 tons to 50 tons and are designed for handling small pulpwood with a grapple or single logs weighing up to 10 tons.

They are mounted for traveling on railroad track or on the ground surface and may be equipped with either electric, gasoline or steam power.

It will pay you to investigate. Our bulletin 241 is interesting and is sent free on application.

ORTON & STEINBRENNER

Crane Builders

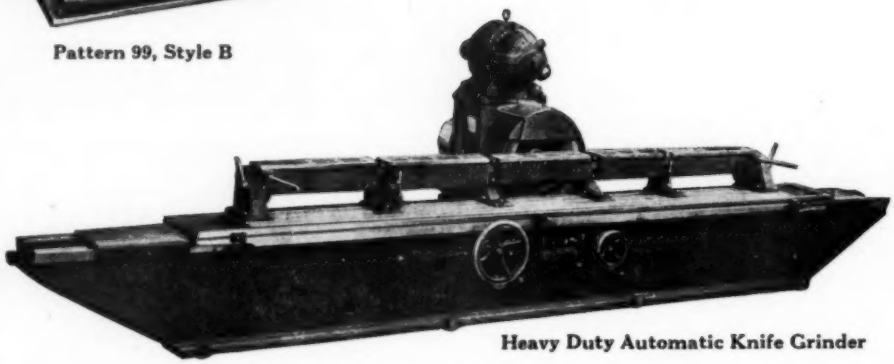
608 S. Dearborn St. **Chicago, Ill.**

Pattern 99, Style B

WE build grinders to grind knives from 30 inches to 17 feet in length for belt or motor drive.

May we send you literature describing them in detail?

We also manufacture grinding wheels.



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THE SPRINGFIELD MFG. CO.

320 Mt. Grove St. Bridgeport, Conn., U. S. A.

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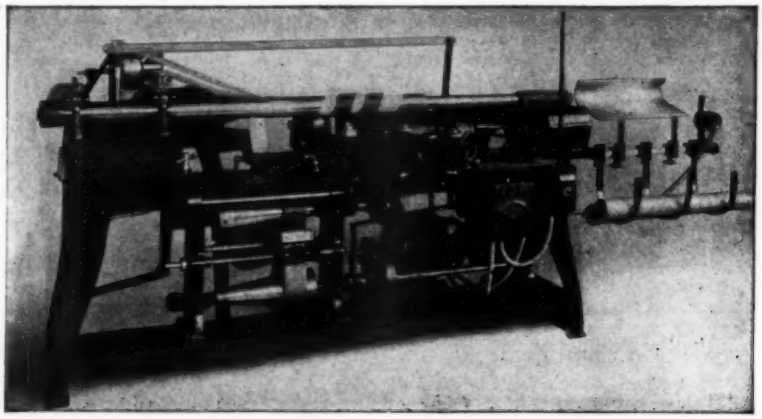

Perfect Tubes at High Speed

For whatever purpose Paper Tubes are desired, this KNOWLTON SPIRAL TUBE MACHINE will be found just what is required.

It produces tightly wound tubes and cuts them cleanly at high speed.

To insure better cans and greater profits, make your tubes on a

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Tissue

American Shipping Co., 4 cs. from Hamburg; F. C. Strype, 45 cs. from Liverpool and 19 cs. from Antwerp; Brooks Paper Co., 12 cs. from Liverpool.

Photo

Globe Shipping Co., 411 cs. from Bremen; F. Henjes, Jr., 74 cs. from Bremen; J. J. Gavin & Co., 5 cs. from Liverpool; P. C. Zuhlke, 287 cs. from Antwerp; Gevaert Co. of America, 159 cs. from Antwerp; T. F. Wilmot & Co., 2 cs. from London; Lithoprint Co., 3 cs. from Antwerp.

Hanging

F. J. Emmerich & Co., 10 bls. from Hamburg, 9 cs. from Southampton and 25 cs. from Liverpool; F. G. Prager & Co., 62 rolls from Rotterdam; Commonwealth Importing Co., 3 bls. from Gothenburg; A. C. Dodman, Jr., & Co., 30 bls. from Liverpool, 7 bls. from Southampton and 2 bls. from Antwerp; R. F. Downing & Co., 4 bls. from London; W. H. S. Lloyd & Co., 51 bls. from London and 6 cs. from Havre; G. W. Sheldon & Co., 12 cs. from London; F. A. Binder, 14 bls. from Bremen; American Express Co., 7 cs. from Havre; P. H. Petry & Co., 20 cs. from Hamburg; International Mercantile Marine Co., 10 bls. from Southampton; Order, 700 rolls from Hamburg.

Board

Friedman & Co., 20 cs. from Hamburg; Metropolitan Import & Mfg. Co., 257 cs. from Hamburg; P. C. Kuyper & Co., 3 cs. from Rotterdam; Houbigant, Inc., 27 cs. from Southampton; Wilkinson Bros. & Co., 44 bls. from Trieste and 10 cs. from Hamburg; Thurnauer & Co., 30 cs. from Antwerp; International Acceptance Bank, 98 bls. from Hamburg; Bendix Paper Co., 41 cs. from Hamburg; International Forwarding Co., 3 cs. from Havre; Hudson Forwarding Co., 2 cs. from Havre; Adrian Vuyck, 751 rolls from Rotterdam; R. D. Strachan, 7 bls. from Bremen; A. Bourjois & Co., 24 cs. from Havre; F. G. Prager & Co., 119 cs. from Hamburg; P. H. Petry & Co., 5 cs. from Hamburg; Phoenix Shipping Co., 25 cs. from Bremen; Wiebush Calendar Co., 22 cs. from Hamburg; H. H. Ayer, 3 cs. from Havre; Order, 236 cs. from Hamburg and 220 rolls from Rotterdam.

Miscellaneous

Hensel, Bruckman & Lorbacher, 16 cs. from Hamburg and 5 cs. from Rotterdam; Arnold & Co., 8 cs. from Canton; Dupont Cellophane Co., 41 cs. from Southampton and 39 cs. from Havre; H. D. Catty & Co., 2 cs. from Rotterdam; New Jersey Worsted Co., 15 rolls and 6 cs. from Hamburg; Whiting-Patterson Co., 38 cs. from Southampton, 63 cs. from Havre and 2 cs. from Hamburg; Tamm & Co., 7 cs. from Bremen and 13 cs. from Hamburg; Bernard, Judae & Co., 8 cs. from Gothenburg; Gallagher & Ascher, 7 cs. from London; C. H. Boulin, 40 cs. from Havre; Coenca-Morrison Co., 9 cs. from Havre and 40 cs. from Marseilles; Erstein & Co., 10 cs. from Havre; A. Flinn & Co., 4 cs. from Havre; Abraham & Straus, 3 cs. from Havre; C. W. Williams & Co., 27 cs. from Antwerp; Traders National Bank, 4 cs. from Antwerp; General Electric Co., 4 rolls from Hamburg; Buschmann Bros., 57 cs. from Hamburg; Irving Bank-Columbia Trust Co., 6 cs. from Hamburg; Japan Paper Co., 11 cs. from Gothenburg, 18 cs. from Genoa and 26 cs. from Havre; British-American Tobacco Co., 37 rolls from Trieste and 49 bls. from Antwerp; Louis DeJonge & Co., 48 cs. from Antwerp; P. H. Petry & Co., 3 cs. from Hamburg; J. R. Livermore, Inc., 15 cs. from Genoa; American Express Co., 17 cs. from Havre; G. Gennert, 4 cs. from Havre.

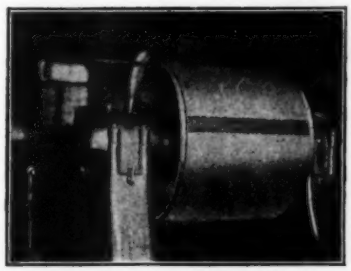
To Import European Pulpwood Via St. Lawrence

Representatives of the Scandinavian Pulp Company, representing an organization of pulp wood mills in Sweden were in Oswego early last month conducting an investigation to determine whether it would be feasible and profitable to import pulpwood direct from Europe to Oswego for distribution by rail or canal to the paper mills on the Oswego river and in Northern New York, which are now largely using pulpwood coming from Canada.

The Swedish companies, it is understood, are anxious to have the shipments made up the St. Lawrence river and through the lakes to paper mills as a possibility of developing an extensive trade to compete with the Canadian product.

Mr. C. O. Drayton, assistant sales manager of The Graton & Knight Mfg. Co., is making an extensive business trip through the South and Southwest. Mr. Drayton states that business conditions in these areas are good and that belting and heavy leathers trade in general is sound and active.

The right way!



The right way to join belts is the "Crescent" way. Crescent Belt Fasteners are the modern serviceable means of belt joining. In direct contrast to the inefficient, fibre weakening methods that shorten the life of a belt even before it goes on the pulleys, Crescent Belt Fasteners strengthen the belt at its weakest point and increase its term of life.

Belting manufacturers universally recommend Crescent Belt Fasteners because they hold with a vise-like grip. Curved—they hug the pulley and hold the power. No strain, slipping or stretching. They make each drive an endless source of power, smooth and frictionless. There is a Crescent Belt Fastener for every size and kind of belting.

Crescent Belt Fasteners everywhere, in every industry, are increasing the life of belts—real belt insurance.

An interesting booklet is yours for the asking; write for it to the Crescent Belt Fastener Company, 247 Park Avenue, New York, N. Y.

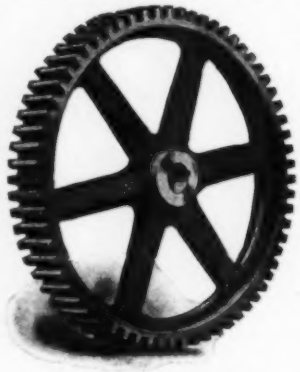
CRESCENT
BELT FASTENERS

A cross section of belting joined the Crescent way. Note the vise-like grip of steel on the lengthwise fibres. Crescents become a part of the belt itself,—that belt is joined for its lifetime. No bulging, or gaping holes in the fabric. Crescents outlast the belt itself.

POOLE GEARS

Stand the Severe Duty Required of Paper Mill Drives. WHY?

Because By our system of gear moulding each tooth is moulded separately and accurately spaced by a mechanical dividing arrangement similar to that employed on a gear cutting and hobbing machine.



POOLE machine moulded gears are equal to the average commercial cut gear, as they are made by an improved method of moulding, and are not to be contused with the pattern gear made on a commercial moulding machine or squeezer.

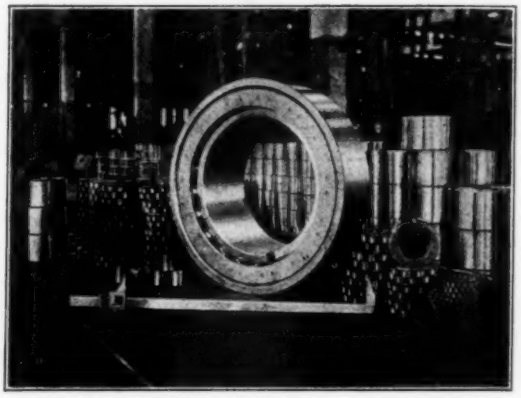
16,000 gear fixtures, ranging in size from the smallest to 65' 0" diameter.

Tell us your Gear troubles. Our engineering department will solve them

Poole Engineering & Machine Co.

Gear Makers since 1843 BALTIMORE, MD.

THE HART BEARING

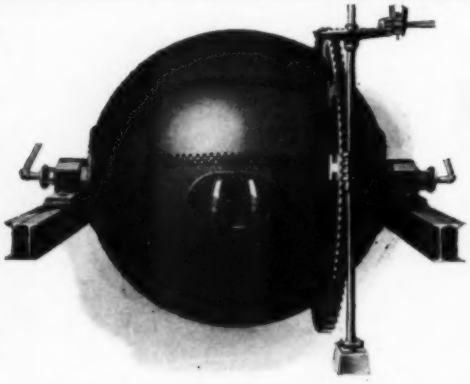


If you have bearing troubles we are prepared to help you. Nothing too large or difficult. Our bearings are standard and extensively used in paper machinery.

Let our engineers solve your problems.

The Orange Bearing Co.

ORANGE, N. J.



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Digesters
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Flumes, Smokestacks, Penstocks, General Steel Plate Construction of every description

WE CAN show you good, sound reasons why you should prefer Biggs Rotaries for cooking and bleaching. Most mill superintendents know them already, or if they don't know all of them, they know this at least—that Biggs Rotaries have been serving continuously and satisfactorily in representative mills everywhere, from their installation to the present day, up to thirty years and more.

Such long, trouble-free performance, plus the advantages of Biggs' experience in designing efficient globe and cylinder rotary boilers, are facts which the buyer of cooking and bleaching equipment cannot afford to overlook.

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for Years of Dependable Cooking and Bleaching